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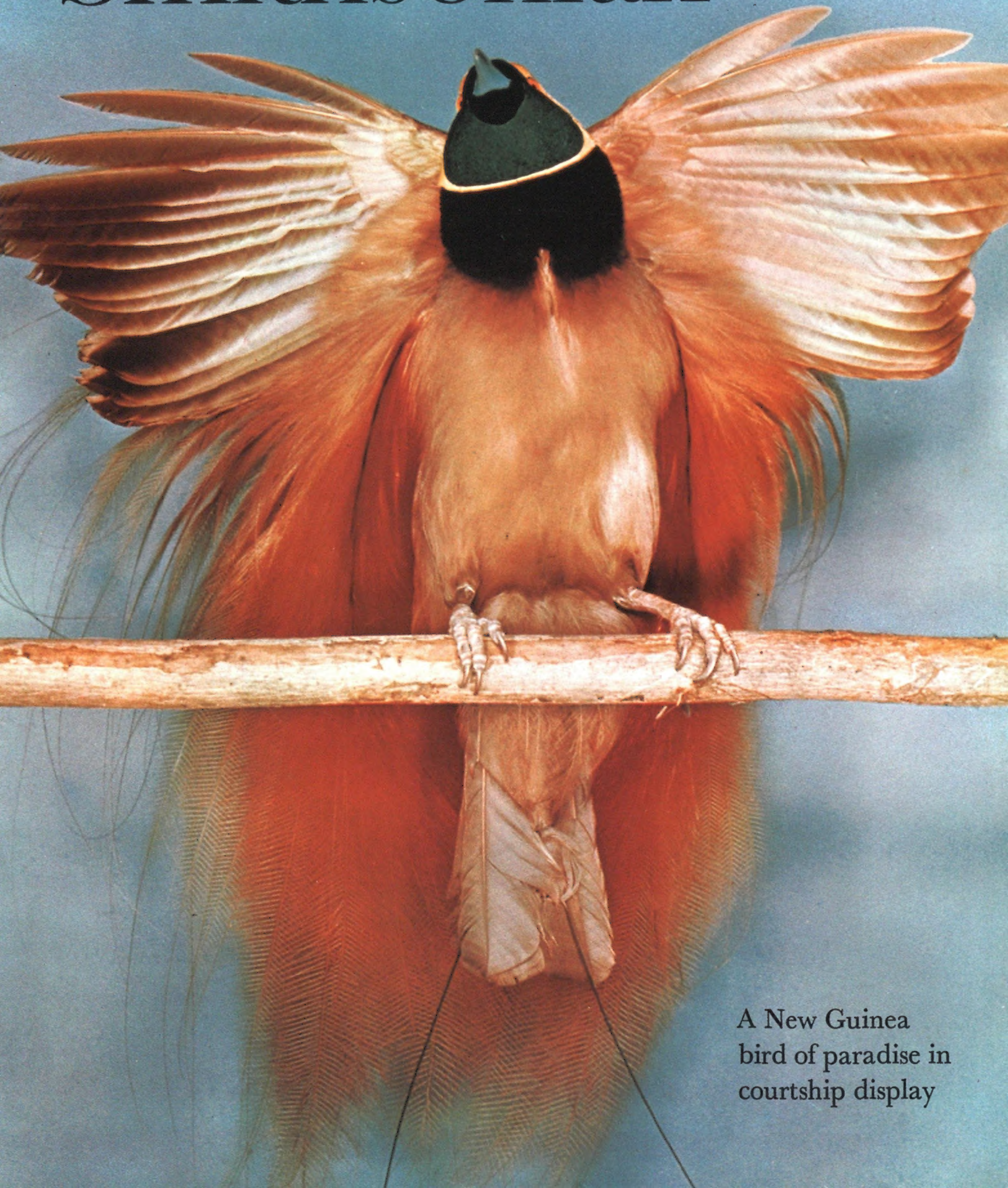

A New Guinea bird of paradise in courtship display

July 1970

Smithsonian

Volume 1, Number 4

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From the ocean depths come fascinating, enthralling

Songs of the Humpback Whale

It has recently been discovered, by Dr. Roger S. Payne of the Institute for Research in Animal Behavior, that Humpback whales sing—wonderful, complex, moving songs. Many scientists and musicians have called these songs the most beautiful sounds of any in the wild world.

The songs of the Humpback whale—which you now have a chance to hear on a remarkable record—are surely one of the most startling and beautiful of the ocean's mysteries. Who would have expected that, even now, we could discover an entirely new point of contact with the wild animal world? Yet with the discovery of the Humpback songs this has happened. They add an entirely new dimension to our experience of the natural environment.

Who would have supposed that the enormous whale—the world's largest animal, one of its most intelligent and most mysterious, the graceful giant of the ocean depths—sings songs that can overwhelm humans who hear them? Yet this happens. People who hear the record—and read the accompanying book—never fail to be deeply impressed, often profoundly moved, by the experience.

A major scientific discovery now on a unique record

Until now these songs have been heard by only a small number of people: Dr. Payne, his colleagues at The Rockefeller University and the New York Zoological Society, and the fortunate few for whom Dr. Payne has played the songs during his lectures. But now our Smithsonian magazine readers can also have this experience. This record has been made as part of an effort to alert ecologically responsible people here and abroad to the fact that whales are now being rapidly hunted toward extinction. Dr. Payne has selected from his many hundreds of hours of recorded songs the outstanding examples, which are presented on the 12-inch stereo record we are offering you here. With the record comes an important book about the songs and the present fate of whales. In cooperation with the New York Zoological Society, we are offering you through this unique record and its accompanying book not only an incomparable listening experience, but also a chance to participate in a fast growing international movement to save whales.

The majority of the profits from the sale of these books and records goes to the New York Zoological Society's Whale Fund, a non-profit organization devoted solely to the study and preservation of whales.

An accompanying book of pictures, facts, and explanations

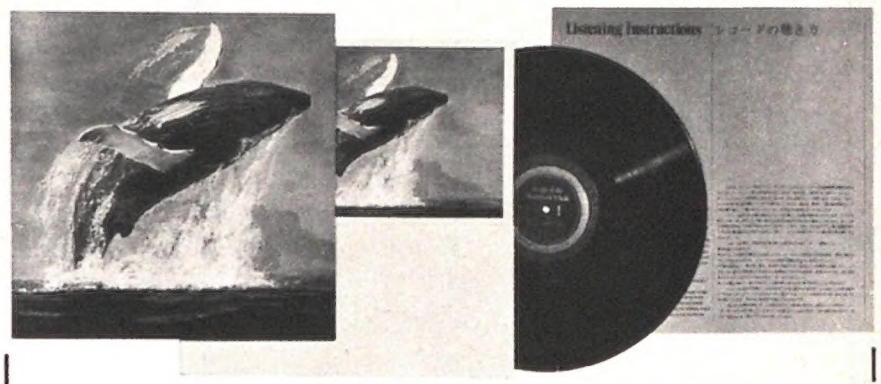
How were the whale songs discovered? The large, fully illustrated book that accompanies the songs tells this story and much more. For instance, it explains why the Humpback's sounds are in fact songs, and it shows you with spectrographic charts the phrases and themes that compose the songs you will hear on the record. More fascinating still, it explores the possibility that the lowest notes of the Humpback's song may travel tens, even hundreds, of miles through the ocean's "deep sound channel," perhaps carrying an intelligible message to other whales vast distances away. And it also explains, with scientific accuracy, just how severely threatened the world's whales now are. If the slaughter is allowed to continue only a short while longer, we may never be able to pursue the fascinating discoveries that are only now being explored; we may never learn what these magnificent whale songs mean.

The whale's world is our world

Every day more people wake up to the fact that our survival depends on maintaining the natural balance of the whole earth—a balance in which whales are as important as we are. And yet, if we don't get involved right now, the whaling industry will soon have slaughtered every species of whale out of significant existence. There's still time. The world has not yet lost its whales. Like us, you can get involved now and help swing the weight needed to get whales protected. You *can* do something, right now, to help save the world's whales.

When you purchase one or more of these book-and-record sets, you will be contributing directly to the crash-program effort of the New York Zoological Society's Whale Fund to reach the business powers, interest groups, and statesmen who, acting together, can put whales under world-wide protection.

Order at least one set *today*



Whales

Smithsonian magazine, Room 2621
420 Lexington Ave., New York, New York 10017

Please send me _____ set(s) of the book and Humpback whale record.

- ☐ I enclose $9.95 per set. You pay shipping and handling.*
- ☐ Bill me $9.95 per set plus shipping and handling.
- ☐ I prefer to put this on my Master Charge. My Account Number is _____.

I understand the majority of the profits from the sale of these books and records goes to the Whale Fund of the New York Zoological Society.

NAME _____

ADDRESS _____

CITY _____ STATE & ZIP _____

*Residents of New York and California please add sales tax.

JCAC SWR11

Letters to the Editor

Yes, yes but—and no

Dear Sir: We have thoroughly perused the two issues of SMITHSONIAN received to date and want to tell you how impressed we are. The publication is beautifully organized to highlight everything which the Institution stands for and it has great reader interest.

ELEANOR and JACK L. LEON
South Kent, Connecticut

Dear Sir: It is superbly conceived, designed and executed and that cannot be said about many magazines these days.

FREDERICK P. TODD
Cornwall-on-Hudson, New York

Dear Sir: We enjoyed vol. 1, no. 1 from cover to cover. Vol. 1, no. 2, however, is far too wordy, and was something of a disappointment.

JOHN ST. PETER
Washington, D.C.

Dear Sir: I think your second issue is much superior to the first.

RICHARD L. CONWAY
Allison Park, Pennsylvania

Dear Sir: The contents of the May issue are fine: A big improvement over the first issue. Secretary Ripley's "View from the Castle" is great. Victor Cohn always writes well, Isaac Asimov always adds spice, as does Ralph Lapp.

CHAUNCEY D. LEAKE
University of California
San Francisco Medical Center

Dear Sir. The appearance of your quality journal leaves me with mixed feelings. The format is attractive and the articles are varied and worthwhile, but not particularly unique. We are asked to crowd our already bulging bookshelves. I am pleased that the Institution feels a need to "add to the sum of public knowledge within the mandate of this Institution," but I question the need to say it in a separate publication. So it is with some sadness that I witness the birth of a new journal. It is much like a new baby in an overcrowded world. No one can deny the beauty of the creation, but what about society that must support it?

ERNEST HARTLEY
Duke University
Durham, North Carolina

SMITHSONIAN *respects Mr. Hartley's mixed feelings. Happily, tens and tens of thousands of new Smithsonian National Associates do not share them.* Ed.

Dear Sir: I'm taking material for my ecology speeches out of your magazine. It's great.

WILLIAM L. GUY
Governor, State of North Dakota
Bismarck, North Dakota

Crown-of-Thorns

Dear Sir. It may interest you to know that in connection with a bill I am cosponsoring, I said in the Senate recently: "Several articles have been published on the 'crown-of-thorns' starfish, but . . . certainly one of the most comprehensive appeared in the April 1970 issue of SMITHSONIAN. This article, by Dr. Jon N. Weber of Pennsylvania State University, appeared in volume 1, number 1, of this excellent publication."

I then submitted the entire article to the *Congressional Record,* where it appeared April 16.

HENRY M. JACKSON
U.S. Senate

Dear Sir: At a meeting in Tanzania, Dr. Wolfgang Wickler, German zoologist and ethologist, showed my wife Marty some photographs of pairs of painted shrimp *(Hymenocera elegans)* attacking various starfish, including the crown-of-thorns *(Acanthaster planci).* Dr. Wickler's interest was in the pair-bond relationship between the shrimp, but Marty recognized that if the shrimp behaved the same way in the open ocean it might have significance as a predator on *Acanthaster* ("Coral killer puzzles science," SMITHSONIAN).

In Washington scientists were highly skeptical that the little shrimp could kill, much less eat, the crown-of-thorns. We also told Craig Fisher who produced the NBC television series on the Smithsonian and the award-winning documentary film on our African wildlife research and was then finishing a film on "The Great Barrier Reef" (televised May 22). Fisher arranged to have several *Acanthaster* sent by air from the Barrier Reef to Wickler's laboratory in Germany. The shrimps ate the starfish, proving that these decorative shrimps really can "control" starfish in the laboratory. The shrimps are found in some of the same areas as *Acanthaster,* and of course research is required to determine whether they will control or even eat the crown-of-thorns in the open sea, as well as to determine any potential environmental side effects.

LEE M. TALBOT
Resident Ecologist
Office of Environmental Sciences
Smithsonian Institution

Dear Sir: You might be interested in further news of the crown-of-thorns starfish. The weekly bulletin of the Australian News and Information Bureau in New York says that "a committee of scientists investigating the plague . . . has found extensive regeneration and recolonization of coral on some reefs badly damaged by the pest. . . . Most of the progress looked as if it had occurred between six months and three years ago."

MRS. JAMES G. DENT
Bethesda, Maryland

Regular Army

Dear Sir: The SMITHSONIAN is a fine, high-caliber magazine which appears to fill a gap previously open. After vol. 1, no. 1, I arranged for a subscription for our town library in addition to my own.

Surprisingly, I find myself [encircled below] in the photograph on page 11 of the May 1970 issue.

CHRIS SEIBEL JR.

Norwood, New Jersey

Dear Sir: How ironic it is to find in a journal dealing so admirably with ecology, anthropology, and the other arts and sciences, an article dealing with the *glorification* of the military.

PATRICK CASEY

South Gate, California

Dear Sir: Permit me to take exception to Mr. Tebbel's fine article "Those Are Regulars, by God!" The article, together with its accompanying art work, suggests more an apologia for maintaining a standing army than a scholarly exposition of the Smithsonian's scholarship and archivist's responsibility.

R. CLINTON TAPLIN

Pearl River, N.Y.

Though Mr. Tebbel's views are his own the Institution does have a Department of National and Military History, as noted in one of the picture captions. Ed.

Dear Sir: "Those are Regulars, by God!" and it surely shows. Probably the best single magazine that's ever come my way. Among other things, it's no mean feat to lay out, as you have done in the first couple of issues, the unhappy ecological picture *without* the sappiness one feels he encounters in other treatments.

KEITH BUCHANAN

Amsterdam, Ohio

Chatsworth Collection

Dear Sir: I spent a day at Chatsworth in June of 1962 and I was most interested in seeing the marvelously reproduced drawings from Chatsworth.

EUNYCE GRIMSLEY

Fayette, Alabama

Environment

Dear Sir: In an issue of such vital importance as the fight against pollution, you must have been asleep re Victor Cohn.

Author Cohn says: "We can probably develop lead-free gasoline for an added four cents a gallon at most. . . ." At least one company is producing lead-free gas available at a neighborhood service station.

MRS. GUSTAV J. MARTIN

Yonkers, New York

A lead-free premium gasoline has been available for some time in American Oil Company stations in the east and south. Now a low-octane, unleaded regular gasoline will be sold across the country at three cents more than the leaded regular. It reduces pollution by 15 to 20 percent and, when car manufacturers produce advanced emission control devices, it will be much more effective. Ed.

Dear Sir: I was certainly pleased with Victor Cohn's article, "But who will pay the piper and will it be in time?" in the May issue of SMITHSONIAN. It was very timely and summarized so well the many issues in the fight to save the environment.

ERVIL D. CLARK

Oregon State University
Corvallis, Oregon

Space and Science Fiction

Dear Sir: I think I have finally found a magazine which keeps my mind off the hundreds of people surrounding me on the subway here in New York. It is a perfectly wonderful, interesting, absorbing, diversified publication. The language is simple and straightforward which makes it intelligible to all age groups—something that is lacking in most magazines. What has endeared it to me most was the fact that while I was reading the article by Ralph E. Lapp, "The Next Big Steps for Man in Space," I had the thought that I would have really liked to have seen an article by Isaac Asimov. You can imagine what I thought when I turned to pages 40-41 and lo—Isaac Asimov! There is something about such an occurrence that has created an almost spiritual tie with SMITHSONIAN!

ANITA NADWORNY

Flushing, New York

Dear Sir: Last month we received a magazine to be read, enjoyed and treasured. What a thrill to learn I had something in common with Dr. Asimov. Though I was one of "those strange creatures called girls" my favorite reading was science fiction, especially Buck Rogers. I ache when I think of my mother giving or throwing away my collection of little books. In 1957 when Sputnik was launched, I was ridiculed when I announced to my friends at the office that I was saving for a "Flying Belt" which I hoped would be available soon enough for me to enjoy traveling without the use of the abominable automobile. My issues of SMITHSONIAN will be "book-loomed" by my heirs.

MRS. FREDERICK MANZIE

Denbigh, Virginia

Dear Sir: Why did Isaac Asimov *avoid* mentioning Arthur C. Clarke? You are a careless editor to let him get away with such obvious prejudice!

RANDALL B. SMITH

New York City

SMITHSONIAN *yields to no one in its admiration for Arthur Clarke—and Ray Bradbury. Good editors, however, do not dictate to writers who are experts. Dr. Asimov is a giant in his field.* Ed.

Late arrivals

Dear Sir: The day after writing you an indignant note that I had received vol. 1, no. 2 of your new magazine, but not vol. 1, no. 1, the latter did indeed arrive. I enjoyed the variety of the subjects, and the articles were all written in a language I can understand. I look forward to the future issues and trust you will accept my apology and not take up my threat of resignation!

ELEANOR L. JAMESON

Buffalo, New York

A plague of kinks and bugs in the workings of SMITHSONIAN*'s new computer system (even computers can be lazy) is causing delays starting service, and/or errors in billing for some subscribers. Our staff is correcting the situation and will soon have it straightened out. The New York mail strike was another factor. We apologize for the inconvenience to those affected and are grateful for patience with our growing pains.* Ed.

To escape the strain of writing her book
Miss Carson sought the peaceful setting
of her garden at Silver Spring, Maryland.

Photographs of Miss Carson
by Alfred Eisenstaedt

By Lillian Moore

Rachel Carson's 'Silent Spring'—its truth goes marching on

On a wooded suburban lot near Washington
a gentle lady finished the book
that inspired the far-from-silent crusade

"Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts." Rachel Carson lived by her words. Nothing—not even the specter of death—could dim her awe of nature nor shake her determination to complete the writing of *Silent Spring*. "Those who dwell, as scientists or laymen, among the beauties and mysteries of the earth are never alone or weary of life," she said. "Whatever the vexations or concerns of their personal lives, their thoughts can find paths that lead to inner contentment and renewed excitement in living." A week before she died, in April 1964, she was in her yard looking for a sunny place to plant roses.

On an untamed plot in a Maryland suburb north of Washington, D.C., Rachel Carson spent the last years of her life. Here, in Quaint Acres, she wrote the book that made ecology a household word.

Man is a part of nature, "however much he may like to pretend the contrary," she asserted in *Silent Spring*. "Can he escape a pollution that is now so thoroughly distributed throughout our world?" She viewed his use of pesticides as a problem of interrelationships in nature. "We spray our elms and the following springs are silent of robin song, not because we sprayed the robins directly, but because the poison traveled, step by step, through the now familiar elm leaf-earthworm-robin cycle." The example, she lamented, is all too frequently part of the visible world around us. It reflects "the web of life—or death—that scientists know as ecology."

The impact of Miss Carson's book, growing during the eight years since its publication, was described on the fifth anniversary of her death by Senator Gaylord Nelson of Wisconsin: "Her book visibly shook a country that had become complacent about the indiscriminate use of these long-lived poisons. . . .

"Although many scientists attacked her thesis on the grounds of inadequate proof, it is becoming frightfully evident that she may very well have understated the case."

Senator Nelson made his remarks at the introduction of a bill to set up a national commission on pesticide danger. The Department of Health, Education and Welfare has recommended strict control of pesticides, and half a dozen states have outlawed the use of DDT. What a difference from the violent opposition *Silent Spring* met in 1962. One researcher for a chemical company claimed that it was "littered with crass assumptions and gross misinterpretations."

Rachel Carson appreciated her role in nature. The brick rambler where she lived hugs a hill wooded with oaks, pines and white birches. Beneath them, yews and junipers jostle for space with tangled underbrush. Virginia bluebells and wild iris bloom in shady niches. This miniature wilderness must have evoked memories of Maine, where she vacationed every summer. Perhaps that is why she had her house, which she designed on simple lines, built here.

Her yard was a haven for wildlife. Jays, titmice and cardinals happily emptied her feeders. Down the hill, frogs thrummed in a bog she prized and protected. In her paneled study, its shelves crowded with the works of Henry Beston, Loren Eiseley, Albert

Freelancer and newspaper feature writer,
Lillian Moore lives in a tree-shaded suburb
not far from Miss Carson's former home.

Miss Carson, second from right, leads
a nature group in Washington's Rock Creek Park . . .

Schweitzer and Henry David Thoreau, she wrote at a cluttered desk framed by double windows. Near at hand she kept binoculars.

But Rachel Carson was no mystical recluse. Besides heeding the demands of research and writing, she cared for her invalid mother until her death in 1958; helped raise two young nieces and adopted, in her 50s, her young grandnephew Roger Christie when his mother died.

In the evenings Miss Carson and Roger often explored the grounds. They would listen for insects, then try to trace the source of the sounds with a flashlight. Some nights they gazed into the sky, peering through binoculars for migrating birds silhouetted against the moon. "She was impatient for spring to come," recalls Mrs. Teresa Green, her secretary in the early days of *Silent Spring*—or, the title it was known by at the time, *Man Against the Earth.*

Mrs. Green, who lives near Quaint Acres, met Miss Carson through a newspaper ad. The author needed someone to take dictation and type her notes. Salary was never discussed. "At the end of the week," the secretary recounts, "Miss Carson would hand me a check and say, 'Will this cover what's due, Teresa?' It was always more than I would have charged."

She remembers Rachel Carson as an elegant woman —conservatively dressed, soft-spoken, patient, exacting. "She never lost her train of thought even when interrupted." Sometimes, Mrs. Green says, Roger bounded into the study, perhaps waving a paper-towel cylinder. "Look, Aunt Rachel," he would insist, "look at my telescope." And she always would do so.

"She had two main concerns at that time," Mrs. Green says, "the book and the boy." After tucking Roger in, she often worked far into the night. It worried her that she didn't hear the vandals who removed the carburetor from her automobile one night. She had parked it in the carport just a few feet from the study.

So absorbed was she in *Silent Spring,* Rachel Carson took scant notice of neighborhood activities. "She just wasn't the type for coffee klatches," observes Mrs. Green. "Oh, she did have one little quirk. After Roger was asleep, she'd have a drink or two. You couldn't begrudge her that. Roger was a very demanding little boy."

Miss Carson was often ill even before she discovered that she had cancer, but she never stopped working. "I felt that the book was continually changing as new material came to her," reminisces Mrs. Green, who typed the dictation at her home. "Frequently Miss Carson would call in a change she wished to make in the manuscript. Her memory was so keen she could quote almost verbatim the paragraph she had dictated a few days earlier."

Miss Carson's old friend, Dorothy Algire, was asked on occasion to dig into library files for articles on pesticide poisoning that Miss Carson recalled reading. "What I checked usually turned out to be

. . . and pauses to discuss the sounds of spring with some youthful wilderness lovers.

exactly as she remembered it," Mrs. Algire says. "But Rachel was very meticulous; she wanted to be sure."

Their friendship dated from 1938, when both worked at the U.S. Fish and Wildlife Service—then called the Bureau of Fisheries. Miss Carson was there for 15 years, first as marine biologist, then as editor-in-chief of its publications. "I vividly recall how we used to spend our lunch hours. Rachel and I would grab a sandwich and rush to Brentano's where we would read and browse. Browsing was all we could afford in those days."

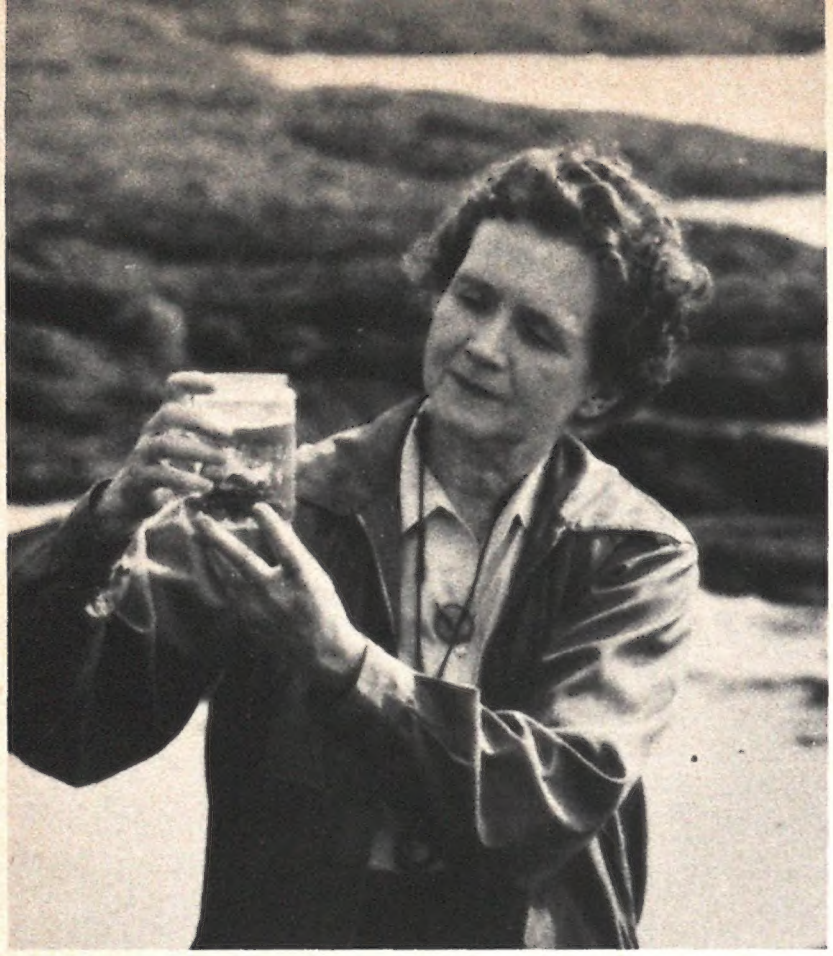
Another associate from Fish and Wildlife, Shirley A. Briggs, helped compile the mountain of information for *Silent Spring*. Some of it was hard to come by. Miss Carson already had a reputation as a sound ecological author, and officials were often aware of implications in her requests for data. They were sensitive about those isolated cases in which fish, birds and small animals had mysteriously died after the use of various sprays. "If a professor talked to Rachel," Miss Briggs says, "he might be threatened with loss of his job or denied a promotion. If he were a government scientist, the appropriation for his department might be cut." Plenty of people were willing to talk but unwilling to be quoted. "At times it seemed to us that gangsters were taking over the chemical industry; at times it was very unpleasant." On one occasion a government scientist wrote Miss Carson that unless he knew her point of view, he couldn't supply the information she sought. Miss Carson's file bulged with documented cases of pesticide poisonings; many examples supported each case cited in *Silent Spring*.

After it became a best seller, Miss Carson—who had a pixieish sense of humor—told her friend, "No more mad hoaxes, Shirley. I'll have to be dignified now that I'm famous." Asked what she had for dinner, she would reply, "chlorinated hydrocarbons, just like everybody else." As Fish and Wildlife editor, Miss Carson might ask Artist Briggs to illustrate a writer's awkward phrasing. "Once," Miss Briggs laughs, "Rachel asked me to draw a picture of a man described as 'frozen-fish minded.' "

During World War II, Editor Carson was privy to the developing saga of DDT. In 1939 Paul Müller had discovered the insecticidal properties of DDT for which he won the 1948 Nobel Prize. Daily, Rachel Carson read of its miracles, of the lives it saved, of the crops it spared. But what of its cumulative effects? The more she wondered, the more she probed. And the more concerned she became.

In 1957 she called her literary agent Marie Rodell to suggest that someone should write an article on the harmful effects of DDT. A few days later Miss Carson called again: She would write the article herself, perhaps expanding it into a "short, quick book."

That quick book consumed nearly five years of her life, finally bursting with an impact still too immense and too recent to be measured in terms of its ultimate effect on today's crusade for a clean environment.



At her Maine summer home, Rachel Carson samples aquatic life from a sun-warmed rock pool, part of her research for *The Sea Around Us.*

Her cat, Muffin, interrupts the day's work in her Maryland study. She slips outside (below) to replenish one of many bird feeders.

"If Rachel were to read all the things that are being written about her today," comments her brother Robert, "she'd probably say 'forget it.' She was a very private person. All this publicity wouldn't mean a thing to her." She would have been pleased, however, at an event honoring her in Maine this year. A string of coastal marshes from north of Kittery to south of Portland was dedicated as the Rachel Carson National Wildlife Refuge.

"She didn't intend that *Silent Spring* be a chamber of horrors," notes Shirley Briggs. "She was struggling to present a positive picture of ecology." Nevertheless, the consequences of poisoning our environment make pretty grim reading. We are, as Rachel Carson wrote, "in little better position than the guests of the Borgias."

Uniquely qualified to cry the alarm, she devoted her life to the natural sciences and writing, cresting the heights in both pursuits. But without her stubborn dedication to preserving nature's web of life, *Silent Spring* might never have been written. She had already won fame and financial independence as author of *The Sea Around Us, Under the Sea Wind* and *The Edge of the Sea.* "In each of my books," she noted, "I have tried to say that all the life of the planet is interrelated."

An author at age eleven

Even as a shy 11-year-old growing up in Springdale, Pennsylvania, she yearned to be a writer. "She really felt important," recalls her brother, when her first published piece—"A Famous Sea-Fight"—appeared in the August 1919 issue of *St. Nicholas* magazine.

The Carsons seemed a "storybook family" to Mrs. Sara Mellon McCullough, who still lives in Springdale. "Mrs. Carson just lived for the children. Why, on a rainy day if you walked into the Carsons' living room you might find the curtains being used for a makeshift dramatic production and Mrs. Carson playing background music on the grand piano." A few years older than Rachel, Mrs. McCullough and her sister played dolls with the Carson girls. One doll had a wig of human hair—Mrs. Carson's.

The Carson home, then an unpainted farmhouse, still stands; a school has replaced the apple orchard. Old-fashioned shrubs such as lilacs, weigela and clove bushes bloomed in the yard. "Everyone had a clove bush," Mrs. McCullough says. "Ours was by the rain barrel, but the Carsons planted theirs by the corner of their house. There was a brick springhouse at the front with walks interwinding down to Colfax Street which is now called Marion Avenue."

The Carsons owned a horse and buggy, kept a cow, and sheltered several pets besides Rachel's "yappy

little dog named Candy." A quiet child, she often hung back and let her mother do the talking. "She was a namby-pamby little thing," her neighbor reflects. "If it were raining or Rachel said she didn't feel well, her mother would fetch her lessons from school and teach her at home. Then Rachel would take the examinations and come out on top."

Rachel's like the mid-day sun
Always very bright
Never stops her studying
'Till she gets it right.

The verse beside her picture in the Parnassus High School yearbook, class of 1925, remained apt all of Rachel Carson's life. Shortly before she died, when the chemical industry was flaying *Silent Spring,* she replied to tirades with eloquence. "We live in a time of challenge, which is also a time of opportunity," she stated. "We live in a time when it is easy to despair, but is also a time of great hope. We live in a time when it is necessary to know for what we stand, and to take that stand with courage."

In his thoughtful account of the ruckus raised by *Silent Spring,* Frank Graham jr. comments that Miss Carson was a remarkable woman, her book a remarkable book. So is his—*Since Silent Spring.* Not only does he paint a believable portrait of her, he verifies and updates the latest in the battle to control pesticides. If anything, his is the more frightening of the two books, for he recites horrors Miss Carson could only warn about.

For example, he points out that Sevin, a pesticide looked upon favorably because it breaks down easily, is lethal in its own way. Its use in Washington State to control ear worms on sweet corn also "controlled" pollinating bees. The Sevin score: one crop saved; unpollinated crops lost.

Educating people to the terrors of pesticides promises to be a long and tortuous process—and perhaps one doomed to failure. A Quaint Acres neighbor of Rachel Carson leaves that impression. He knew her by reputation only, he says, "but we were all vaguely proud to have someone famous living here. As for the impact of *Silent Spring,* there just wasn't any. People who sprayed went right on spraying."

Nevertheless, she may be best remembered in the phrase that Abraham Lincoln applied to Harriet Beecher Stowe, author of *Uncle Tom's Cabin:* "So this is the little woman who made the big war!"

Now the study window of her former house looks out silently in the springtime of 1970.

By Jonathan Fineberg

Boston's Museum looks ahead to another century

It has quietly gone its own way, depending more on the knowledge and taste of its patrons than on the size of their fortunes

M. & M. Karolik Collection by exchange and gift of John Wilmerding

Going down Boston's Huntington Avenue, that bleak thoroughfare where so many of the city's bastions of culture stand, one comes at last to the Museum of Fine Arts. Its aloof classical façade (opposite) rises somewhat incongruously behind a piece of American kitsch, the statue of a praying Indian astride a horse.

This combination of New World naïveté and Old World poise is in a way typical of the Museum itself, which grew out of the confident 19th-century Bostonian belief that public-spirited citizens could put together in a few years what in Europe would represent the accretion of centuries. As a matter of fact, they were right. The Boston Museum is today one of the great museums of the world.

This year, like the Metropolitan Museum in New York (SMITHSONIAN, April 1970), it is celebrating its 100th anniversary. Actually, it is slightly older than its New York rival, having received its charter some nine weeks earlier on February 4, 1870. And its development has been quite different, partly because it has never had any super-rich patrons, has never had any public subsidy of any kind, and has always taken very seriously one of the goals of its original charter: ". . . to afford instruction in the Fine Arts."

Educational manifestos and testimonials to a faith in the innate, though latent, good taste of the common man recur in the Museum's early reports. And in 1907 Museum Director Arthur Fairbanks reinforced the broader public-service orientation of the Boston Museum when he wrote that "the Museum's use by the connoisseur, the artist and student of the history of art is in no way inconsistent with its use by the public at large." It established a School of Drawing and Painting in 1876, only six months after the Museum itself had moved into its first building on Copley Square; in 1906 it formed a committee on public education to promote utilization of the Museum by colleges and schools; in 1907 it became the first museum in the world to offer its visitors a full

Jonathan Fineberg is a sculptor and art critic who has won prizes in both fields. He is currently writing books on early Kandinsky and early Picasso.

Boston Harbor by Fitz Hugh Lane, painted c. 1850-55, is one of the 130 works acquired by the Museum of Fine Arts in celebration of its 100th anniversary.

Cyrus Dallin's *Appeal to the Great Spirit,* familiar through millions of small-scale reproductions, stands before the Museum's second, and current, home.

Boston's famous ivory-and-gold *Snake Goddess* (shown here actual size) was discovered near the Palace of Knossos on Crete. It was made between 1600 and 1500 B.C., at the height of Minoan civilization.

Above: Gift of Mrs. W. Scott Fitz

Opposite: Gift of Miss Alice Tully and Centennial Purchase Fund

staff of trained guides; and as early as 1911 it began bringing in children from Boston playgrounds for story hours and magic-lantern shows. But even more important than this early interest in public service and education is the sheer magnitude and quality of its collections.

By 1909, through a process that owed something to coincidence but even more to the pervading intellectualism of Boston, the Museum had already amassed the world's most important collection of Asian art under one roof. It began when Edward S. Morse, a Harvard-trained zoologist, set out for Japan in 1877 to collect brachiopods (a bivalve mollusk of some evolutionary interest), and discovered Japanese pottery. He was responsible for introducing two other remarkable men to the art of Japan: Ernest Fenollosa of Salem, who went out in 1878 to teach philosphy and discovered Japanese painting, and Dr. William Sturgis Bigelow, a young surgeon who found his work uncongenial, went to Japan with Morse in 1882, and stayed seven years.

What an interest in brachiopods can lead to

Morse's truly exhaustive survey of 19th-century Japanese pottery (more than 5,000 pieces), Fenollosa's scrolls and screens, and Bigelow's 50,000 prints, hundreds of paintings, swords and Noh costumes form the core of a Japanese art collection which today no museum outside Japan itself can equal.

Fenollosa became the first Curator of the Japanese Department in 1890. The Museum had already acquired his vast collection of more than 800 Japanese paintings, including the famous *Burning of the Sanjo Palace* (page 16). This 23-foot scroll from the third quarter of the 13th century is one of three surviving scrolls from the *Tales of the Heiji Insurrection.* It vividly represents the militarism, the veneration for heroes and the narrative excitement of painting in the mid-Kamakura period. The Japanese have designated only six paintings outside Japan as "national treasures"; five of them are in the Museum of Fine Arts. Boston also has noteworthy Chinese paintings, sculpture and objects, and an extensive collection of art from Thailand and India.

The major initiative in building an Egyptian collection came in 1905, when the Museum joined Harvard in sponsoring the richly rewarding excavations of Old Kingdom antiquities being carried out by George Andrew Reisner. The dig went on for 40 years; as a result, the Boston Museum acquired the greatest collection of Old Kingdom sculpture outside Cairo. It includes the alabaster statue of King Mycerinus, unearthed in 1908, the only larger-than-life Old Kingdom sculpture apart from the Great

Another Centennial acquisition, this Cycladic idol of the third millennium B.C. is one of the largest known examples (it is just under 44 inches high) of Aegean sculpture from the Early Bronze Age.

Sphinx itself. There is also a double statue of Mycerinus and his queen, which has miraculously survived in almost perfect condition. This piece is such an important prototype of more than 2,000 years of Egyptian portrait sculpture that the Cairo Museum currently exhibits a plaster replica of the work among its own original statues.

But the Museum's Classical Department displays the entire range of Greek, Roman and Etruscan art. It has the finest collection of antique bronzes in America and a collection of Greek vases that rates second, in this country, only to that of the Metropolitan in New York. The newly acquired Cycladic idol (page 13) is the second largest known example of Aegean Island sculpture from the early Bronze Age (third millenium B.C.). Figures of this type were placed in graves along with marble vessels of similarly simple but sophisticated form, and they probably are intended to represent either the deceased or a deity of the dead.

The classical collection also boasts a rich array of sculpture from the fourth century B.C. (including the marble head of Aphrodite below), and the 2,400-year-old gold earring of a winged charioteer, the famous three-sided antique relief sculpture from the fifth century B.C. known as the Boston Throne, and the Minoan snake goddess (page 12), which dates from 1,500 B.C. A Cretan immigrant brought the gold and ivory fragments of the snake goddess to this country in a cigar box 56 years ago. Reassembled, it turned out to be what is surely one of the most precious objects to have survived from the Minoan civilization of Crete. It probably came from the treasury of the palace at Knossos, and may represent the Aegean goddess who protected the household of the king.

When the Museum of Fine Arts opened its own building on Copley Square in 1876 it was already in possession of a brilliant array of American paintings: portraits by Copley, Stuart (among them the famous portraits of George and Martha Washington) and Neagle; historical paintings by Trumbull and West; and genre pictures of the type of Fitz Hugh Lane's *Boston Harbor* (page 11), although that particular example was acquired only this year. The Museum's collection was also liberally endowed with works by the late 19th-century American realists, Homer and Eakins, and with pictures by Whistler, Mary Cassatt and John Singer Sargent.

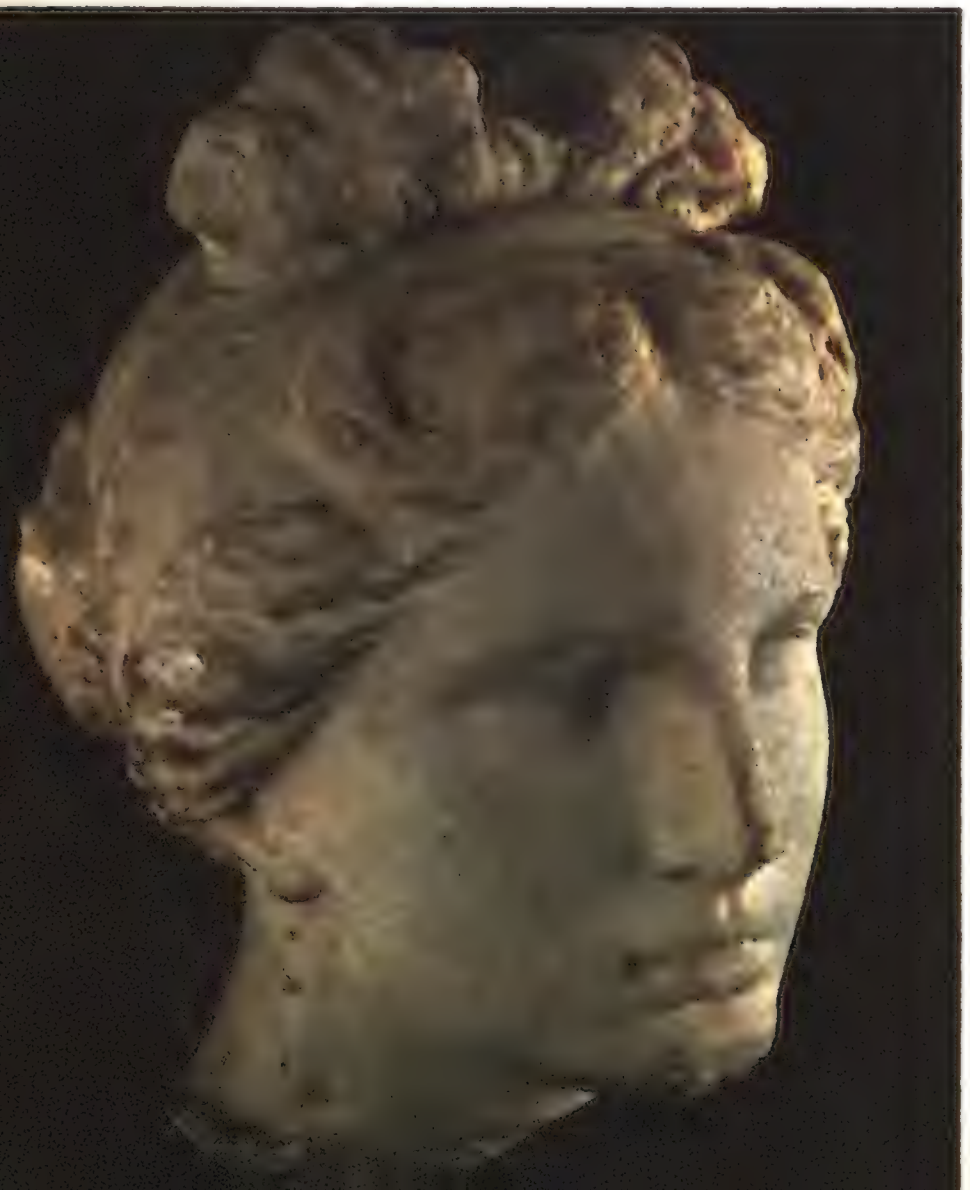
A strong showing of impressionists

In the meantime, the Museum had been acquiring a strong representation of 19th-century French painting. Courbet's first sale in America, his *Quarry* of 1866, found its way to the Museum along with 60 Millets and a major collection of impressionist pictures. Degas' portrait of his father listening to the guitarist Pagans (page 18), painted about 1872, Monet's *La Japonaise,* Van Gogh's *Postman Roulin,* Renoir's *Bal à Bougival,* and Gauguin's masterwork *D'où venons nous?* are only a few of the highlights of the impressionist and post-impressionist pictures.

America's first great Flemish painting, Rogier van der Weyden's *St. Luke Painting the Virgin,* came to the Boston Museum in 1893. Dating from about 1436, it was one of the most widely admired and copied works of its day. Several versions of the painting exist, but the Boston panel is by far the finest in quality. The 1963 purchase of an anonymous *Martyrdom of St. Hippolytus* added yet another stellar possession to the Museum's Netherlandish collection, which already contained works by Lucas van Leyden, Joos van Cleve, Jacob van Ruisdael, Rubens, Hals and Rembrandt.

Upon the recommendation of John Singer Sargent in 1903, the Museum purchased the first El Greco in America, his portrait of *Fray Hortensio Feliz de Palavicino.* Sargent also influenced the Museum to buy Velázquez' *Don Baltasar Carlos and His Dwarf.* Although somewhat weak in Italian primitives, the

Bartlett Collection



This beautiful marble head, c. 325-300 B.C., may be from the workshop, if not the hand, of Praxiteles.

Charles H. Bayley Fund

Among the Centennial acquisitions is this *Portrait of a Young Girl,* attributed to Raphael, c. 1505. It is presumed to be a portrait of Eleonora Gonzaga at her betrothal, when she was 12 or 13 years old.

Fenollosa-Weld Collection

Museum does possess Duccio's great altarpiece of the *Crucifixion,* while its early Renaissance pictures include works by Fra Angelico, Giovanni di Paolo, Barna da Siena and Gentile da Fabriano. The Venetian collection consists of works by Bartolomeo, Vivarini, Titian, Tintoretto, Veronese, Lotto, Guardi, Canaletto and Tiepolo, including the resplendent easel painting reproduced on page 19.

Recently the Museum has enhanced its Italian Renaissance collection with the purchase of the *Portrait of a Young Girl,* attributed to Raphael. Presumably it portrays Eleonora Gonzaga, daughter of Isabella d'Este and Francesco Gonzaga, the Marquis of Mantua.

Where the great Museum of Fine Arts suddenly collapses (and it is not alone in this) is in its display of 20th-century painting and sculpture. A few scattered works present only a meager, unimaginatively exhibited sampling of modern art. One might attribute this in part to the double demands upon the current Director of the Museum, who also serves as the Curator of Paintings.

A place of the Muses has financial problems

Surely the real reason for any such deficiencies as the Museum exhibits, and acknowledges, is the financial squeeze. The annual budget ranges between two and three million dollars, and most of that goes to salaries and upkeep. Neither the city of Boston nor the state of Massachusetts contributes more than a nominal sum to the upkeep of one of the nation's greatest resources.

Euripides referred to the places where birds sing as "museums of birds." To him the word "museum" meant a place that offers the inspiration of the Muses. To the modern ear, this word rarely evokes such an unreservedly delightful image. But one has only to recall the meticulous elegance of Boston's reconstructed Japanese rock garden, or the medieval moodiness of the elaborate wooden ceiling which surrounds the Museum's 14th-century lancet from Hampton Court, or—still more—the Catalonian chapel in which the early music and long wooden pews create an intimate and harmonious atmosphere, or the 12th-century Spanish frescoes, to realize that the Boston Museum of Fine Arts represents more than a passing desire to make the experience of art a living and inspiring event, as befits an ancient place of the Muses.

Fierce hand-to-hand combat swirls in the foreground of a detail from *The Burning of the Sanjō Palace,* a masterly Japanese scroll from the late 13th century.

John T. Spaulding Collection

Edgar Degas was one of the great portraitists of all time, and his painting (c. 1872) of his father listening to a friend, Lorenzo Pagans, is a highlight of the Boston Museum's impressionist collection.

All the gorgeousness of the 18th century in Venice is reflected in Tiepolo's *Time Unveiling Truth,* an elegant easel painting of a classic theme by an artist who is better known for his frescoes.

Charles Potter Kling Fund

Article and photographs by Crawford H. Greenewalt

Fred and I—a tale of romance in paradise

Raised by hand, this spectacular bird dotes on humans and offers a courtship display when they visit his New Guinea sanctuary

This is commonly called Count Raggi's bird of paradise. The species is found only in New Guinea, where for many years its glorious, highly variegated plumage has been a principal feature in the spectacular ceremonial headdress of the New Guinea natives when they gather for their traditional sing-sing. The danger that birds of paradise might become extinct has been met by prohibiting trade in their feathers, and by permitting the natives to hunt them only for their own adornment, and only with bow and arrow!

I went to New Guinea to take pictures of these spectacular birds, but without any real expectation that I could photograph them in their display postures. However, I had an extraordinary bonus in that this particular "Count Raggi" decided to court *me*. I hasten to say that this could not fairly be attributed to Greenewalt charm; the bird would display to any human that stood before his cage. I was not piqued by his lack of discrimination—merely thankful for the opportunity to take some unusual photographs.

All of this took place at the Hallstrom Bird of Paradise Sanctuary in the New Guinea Highlands near Mt. Hagen. Our bird (we called him Fred) had been hand raised from an egg by Fred Shaw-Mayer,

Retired president of du Pont, Mr. Greenewalt remains chairman of its board, holds many directorships (he is a Smithsonian Regent) and has won fame for his extraordinary photographs of hummingbirds.

Relaxed, Fred shows the sleek brown pinions that encase his fluffy tail feathers.

As a human appears the bird starts going into his display, spreading his wings and fanning out his tail.

The author's fingers produce love-play by Fred. He strokes one gently with his beak.

the first director of the Sanctuary, and was about ten years old.

I'm not an expert on imprinting, but I had read reports by Konrad Lorenz, dean of animal behaviorists, to the effect that if a human is the first living object seen by a hatchling during a short critical period after emerging from the egg, that human automatically is regarded as a parent. Lorenz describes delightfully his imprinted goslings following him in a dutiful line as he swims in the Danube. I would never have minded being imprinted as a parent—after all I have three children and nine grandchildren—but I must confess to some mild alarm—at my age—in being imprinted as a potential bride.

At the Hallstrom Park Sanctuary, Fred and many other birds of paradise were kept in large cages with plenty of flying space and small trees and shrubs to make them feel at home. The park cages, however, were not well suited for photography, so with some trepidation, Graeme George, the Australian curator of the Sanctuary, transferred Fred to my photographic cage which measures only 30 x 30 x 48 inches and has a blue background. The question was whether Fred would still think of me as a bride under such confining circumstances. To my relief the answer—loud and clear—was that he would.

Thus the pictures speak for themselves except perhaps for the one showing Fred touching my hand with his beak. In this display he would very gently rub his beak against my fingers, clearly a rather special gesture of affection. During the display he would also utter a not very musical croak for my (or his) delectation.

Scientific studies indicate that when imprinted birds reach maturity they exhibit sexual interest in their foster parents or a similar substitute. Under natural conditions a bird is imprinted on its own parents or nest mates and upon growing up mates with others of its own species. This may explain why this hand-raised bird of paradise tries to mate with the hands that once fed it.

It is rather sad to report that Fred showed no interest in females of his own species. No "Countess Raggi" could move him to the transports I so readily induced. Fortunately, in the wild, these male birds are all Don Juans, courting and mating, then leaving their brides strictly alone to build the nest and raise the young while they turn to their next conquest.

Displaying fully, Fred arches his bright plumage above his back while tail streamers called "wires" curve below. See cover for front view.

By Catherine Drinker Bowen

For American women, again it is the time to move mountains

A call to arms for our 50-year-old civic army, the League of Women Voters, and to all other marchers in the long parade of feminism

There is small wonder that Dr. Gallup, the pollster, referred to the League of Women Voters as "the greatest civic army of all times." Studying the League's activities I am impressed with the far-reaching plans, the skill in spreading campaigns from lowliest county committeemen to the U.S. Congress. It is surprising to learn that in the entire United States, the League is only 160,000 strong. When I saw the figure I felt like Senator Aiken of Vermont when he said, "I thought there were millions of them!"

In 1921 the League, only a year old, was already fighting for the Sheppard-Towner Act, a public measure to combat the high death rate in childbirth. In 1933 the League battled for the Tennessee Valley Authority; in 1934 fought for the inclusion of a maternal and child health program in the Social Security Bill; during World War II, for the O.P.A. and price control, formation of the United Nations, then the Reciprocal Trade Acts of the 1950s, and right up to the 1960s for civil rights, equal employment for minorities, better housing, clean water. In the 1970s the League will be concerned with foreign policy, including possible trade agreements with China, pollution control, the direct popular vote for President, representation of the District of Columbia in Congress, population apportionment of the vote.

Behind and beneath all this are the names of women who fought for the vote and won it—a glorious roster. Emmeline Pankhurst, eight times on hunger strike in London jails; our own Lucretia Mott and Elizabeth

Famed biographer and historian, Mrs. Bowen addresses a League of Women Voters audience at the Smithsonian. Note a founder of the League in picture at the right.

Cady Stanton, issuing a famous declaration of independence for women at Seneca Falls, N.Y. in 1848, Susan B. Anthony and Carrie Chapman Catt. It was the western states that came forward first: Wyoming, Colorado, Utah, Idaho, granting suffrage to women before the year 1900.

Shortly after the 19th Amendment was passed, Mrs. Catt, founder of the League, announced, "We shall not vote as women but as American citizens, and we are unafraid."

I believe the League has passed beyond this statement, has indeed surmounted it. We no longer strive to be men or vote like men, nor do we deprecate the attributes of our sex. I hear rumors that the League considers dropping the word Women from its title. I hope not. Time was when *woman* meant amateur, dabbler, outsider, or mere power behind the throne. Not so long ago it was considered appropriate for women to have their portraits painted with a rose in the hand, a fan, a toy. I am often asked why I never wrote the biography of a woman. This is because a woman's biography—with about eight famous historical exceptions—so often turns out to be the story of a man and the woman who helped with his career. Abigail Adams means John Adams; that's whom one would really be writing about.

But it's a new game now, and the rules have changed. Women are proud of their sex, proud of being women; they show their pride bravely. Poets have actually begun to celebrate that maligned creature, Eve, archtemptress and mother of us all. Archibald MacLeish has written a book of *Songs for Eve:*

> The Fall! she said—
> From earth to God!

Yet even today, in this year of 1970, there is still more nonsense talked, and more nonsense accepted, about *women* than about any other subject. People repeat glibly that man's instinct is for adventure,

The last American suffrage parade rolled through Washington in August 1920. The second flag-carrying marcher beside the touring car is Maud Wood Park, first president of the League of Women Voters.

woman's is for safety. Men are active, women are passive. One asks, Is the tigress passive, or the she-bear prowling with her cubs? Mother Jones, the labor organizer, was she passive? Joan of Arc of the coal fields, they called her "the most dangerous woman in the country." Very pertinent are the words of a black caucus man to a member of the League last December at the White House, during a conference. "Man!" he said. "You ladies are okay. You look so respectable, but you really can *put out!*"

It's time to do a little searching around this matter of male and female instincts. The primary mammalian sex characteristics are not something to guess about, or tailor to the argument in order to win a point. For instance, cleaning house is thought by many to be natural to a woman, instinctive. Scientists today are tearing large holes in such assumptions; they have much to say on the subject of so-called instinctual male and female traits and "gender roles." In the biology laboratory, scientists are searching to determine if male and female psychological differences are innate or acquired. Are these differences determined before birth by the chromosomes, the genes? Or are they absorbed through the environment very early, during those crucial first three years of life, while speech is being learned? Biologists speak of the need to distinguish NURTURE from NATURE.

These scientists write of what they call psycho-sexual neutrality at birth, and the essentially bisexual character of our mammalian inheritance. Their books present case histories by the dozen—perfectly fascinating, and hardly suitable for polite presentation. If physicians mistake the sex of a baby at birth, due to certain physiological abnormalities, and if the truth is not learned until perhaps seven years later, a human being can prove amazingly flexible in adapting to his or her psycho-sexual role.

The fact of this scientific search is enormously significant for women. Biologists have reached the very cautious conclusion that there *seems* to be an inherent predisposition toward the sex into which one is born. There *seems* to be. That's as far as they will go.

The point I want to make is that if women understood how minuscule these psycho-sexual differences are at birth, and what a power they possess to make their feminine role what they wish it to be, they would not let themselves be backed into false positions. It's my belief that women can be and can do anything they want—if they want to hard enough. Yet even recently, psychologists gave girls certain written tests and the girls scored high. But when tested in a class with boys, the girls scored low. They felt uncomfortable at competing. They said boys don't like girls who are too bright. So there we are again!

Such attitudes, bred into women from birth, will perhaps not be erased for generations, in spite of Women's Lib. I am not here to urge competition with men. Surely that is for children. But I am angry when I see women lose faith in themselves, and slide back into shelter out of self-deprecation or despair. Women as well as men are forever hammering at females about their role, their proper place in society.

We don't have to listen to any of that! As a mother and grandmother I can testify that the bearing and rearing of children is all that it is said to be. It is joy and sorrow, the very stuff of living.

Rearing children not enough for spirited women

But it is not all of living, by half. Women within and without the League are working on environmental improvement. Any way one looks at it, deliberate restriction of the world's population is going to change the lives of women, push them out of the house into a larger housekeeping. No woman of spirit can focus her entire life on the rearing of two children. Whether by nature or nurture, women indeed possess an affinity for the conservation of life; they like to take care of growing things. Now and in the near future, women will be enormously valuable in this larger housekeeping, this national nursery. Whether they act as champions of peace-not-war or in a hundred different capacities, women will use their talents and their vital energies in national causes, world causes.

But don't let's be too slow in starting. The League of Women Voters does great work in spreading information about government and in getting out the vote. Yet I urge my conviction that the things women believe in and want done will not be done until women are in elective office. Americans are backward here. After all, India has a woman prime minister; also Israel; and the United Nations has a woman President

Your feminist lineup, WITCH, SCUM and all

The civil-rights movement radicalized many young women and helped them turn to feminism. Some followed Mrs. Betty Friedan into the National Organization for Women (NOW), which she formed in 1966 to try to sever the *Küche, Kinder, Kirche* cycle to which she said American society relegated women. Some men joined too.

Other activists, younger or bitterer or both, rejected NOW's structured moderateness and turned hard left to form Women's Liberation. This pillar of "the movement" eschews feminine trappings as well as officers, spokesmen or "leaders." It excludes men.

Splinter groups dot the fringes: WITCH (Women's International Terrorist Conspiracy from Hell); Redstockings; SCUM (Society for Cutting up Men); the Pussycat League; and POWER (Professionals Organized for Women's Equal Rights). Viewed from left to right some look like this:

SCUM: Membership a state of mind rather than numbers. Conceived—beg pardon, ma'am—by Valerie Solanas, SCUM's Manifesto grants membership to women "whose sole diversion is prowling for emotional thrills and excitement, who are given to disgusting, nasty, upsetting 'scenes,' hateful violent bitches given to slamming those who unduly irritate them in the teeth . . . in short, those who, by the standards of our 'culture,' are SCUM."

WITCH: An outgrowth of the revolutionary wing of Students for a Democratic Society. Its small membership is concentrated in cities. WITCH is virulently anti male and bars men from all its activities. The nickname given WITCH and SCUM by other feminists is "Crazies." The Crazies in turn call the more moderates Doris Days or Aunt Thomasinas.

Women's Liberation: It has no central office and no officers. A few women start a cell which splits when it has 15 or 20 members; the two cells subdivide. Women's Lib has spread from its coastal beginnings in New York, Boston, Baltimore and San Francisco to small cities across the country. It appeals to college women and to young, educated married women who want both husbands and careers. Its tactics are more noisome and disruptive than malevolent. Women's Lib members disrupted Senate hearings on the Pill, burned their bras at the 1969 Miss America Contest, and stripped to the buff to protest *Playboy*'s portrayal of women as lust objects.

Women's Lib produces feminist theater in New York and Boston and a literary magazine, *Aphra,* in Baltimore. At least two schools, New York University and Manhattan's New School for Social Research, offered courses in the movement last year. Other campuses are likely to follow suit. Loose structure and lack of officers is believed to make every woman a guerrilla. Communication is mainly by newsletter.

NOW: Best organized of the groups, it has 6,000 members in chapters across the nation. It welcomes men, and a few hold offices. More moderate in stance, NOW appeals most to women of age 30 up. Some members, however, hold views similar to those of Women's Lib.

NOW has several goals: repeal of abortion laws, child-care centers as accessible as parks and schools, no discrimination in employment because of sex.

The Pussycat League: Comes now a little something for the men. The idea was hatched over a lunch by three career girls. "The Pussycat League would be feminine rather than feminist," wrote one founder. The League now has hundreds of dues-paying members, a newsletter called *Adam's Rib,* and a book in the offing: *The Lamb Chop is Mightier Than the Karate Chop.*

All feminists share one goal: full equality with men. But the movement is too diverse to generalize. Some Crazies foreswear all relations, social or sexual, with men. Some Doris Days want only to live something more than *Küche, Kinder, Kirche* while remaining wives and mothers. The majority stand in between.

"Only a small part of the population suffers because it is black, and most people have little contact with minorities," feminist Lucy Komisar recently wrote in *Saturday Review.* "Women are 51 percent of the population, and chances are that every adult American either is one, is married to one, or has close social or business relations with many.

"The feminist revolution will overturn the basic premises upon which these relations are built. . . .

"If the 1960s belonged to the blacks," says this feminist, "the next ten years are ours."

—Jim Hampton

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of the General Assembly. But even in this late day it would come as a surprise if a woman were elected President of the United States, or named Secretary of State. There is no woman on our Supreme Court. Of 435 representatives in Congress, ten are women. Of a hundred senators, only one. And, gorgeous as Margaret Chase Smith may be, she is a very small minority.

There is a terrible complacency about American women, married women especially. They sit at home, thinking about being comfortable. They have persuaded themselves, or they have let somebody persuade them, that being loved within the four snug walls of home is all that life has to offer. I once heard a man say that nothing is looked for in a married woman but respectability. The League knows how to disseminate information at the local level. What I'd like to see is women running for office at every level. Even if a candidate is defeated, she can speak on the issues. She is a voice, people listen. I want to see women no longer the power behind the throne but *legislators.* Black women, white women, Jewish women, Catholic women and, heaven save the mark, women who are WASPS.

In this new worldwide housekeeping, the women of our civic army can go far beyond the League. There is indeed no calculating their potential. May they prove their strength and soon.

A long war won, and a new demand

Joan of Arc and the goddess Athena perhaps were feminists in their way, but the first American stirrings over women's rights coincided with the abolitionist movement of the 19th century. Not until slaves were freed did women begin to march toward suffrage.

Their step quickened at the turn of the 20th century when their British sisters hit upon a now well-known approach. When suffragists were thrown out of a political meeting and roughed up by police, the resulting outrage at Bobby brutality inspired Emmeline Pankhurst to seek further confrontations. Some American militants followed suit. But perhaps the best technique here was to parade, often suffering abuse which always aroused sympathy for The Cause.

At any rate, The Cause won in 1920 when the 19th Amendment passed and women's suffrage became law.

Long arms of British law seize Emmeline Pankhurst, leader of the militant suffragettes, and hustle her from Trafalgar Square. Jailed again and again, she fasted; released, she began fresh agitation.

Suffragette who chained herself to a grating in Parliament is led off—with the grillwork.

Propaganda picture shows a fasting suffragette in prison being force-fed through her nose.

Clad as Joan of Arc, another British militant takes part in a suffragette parade.

Bobbies overwhelm a lone suffragette after melee sparked by Mrs. Pankhurst's arrest. Beating officials, burning mail and badgering police, these women drew attention to The Cause.

Rare group portrait at an 1888 suffrage meeting presents a powerhouse of contemporary leaders, among them Susan B. Anthony (second from left), Elizabeth C. Stanton (third from right).

Suffragists parade in Washington in 1917. Marchers got as much attention as Britain's militants.

Mrs. O.H.P. Belmont and daughter Consuelo Vanderbilt (Duchess of Marlborough) turned over their Newport estate to a suffrage meeting.

1970 feminists invade *Ladies' Home Journal* to tell editor and publisher John Mack Carter to step down from his job in favor of a woman.

A monument to disastrous

Washington, D.C., is one of the perfect examples of 18th Century city planning.

Its broad esplanades and open spaces have served as a model to almost every other city in America.

Which is one reason our cities are in so much trouble today.

Nowadays, no city can afford to waste this much space. There's no room for expansive boulevards and miles of townhouses and small shops, much less a daytime business section, a nighttime theater district, parking lots in prime space, unused rooftops and other buildings thrown in wherever they fit.

The only way a city can beat the population explosion is to build *up*, not *out*. To build apartment houses on top of hospitals, playgrounds on top of supermarkets on top of garages. To combine facilities—like merging a nighttime theater with a daytime lecture hall, or a daytime courtroom with a nighttime classroom.

As a step towards this change, Olin has joined with several companies in a new project called the Jonathan Housing Corporation, an experimental "living laboratory" to test housing innovations.

It plans to build homes based on the "stack" concept—that is, constructing finished living modules and stacking them around a central stair core—in an experimental community near Minneapolis.

Essentially, the community is a city in embryo, with five semi-

Advertisement

city planning.

independent villages (or neighborhoods) surrounding a town center, which will consist of a single, large multi-purpose building built over the railroad and principal highway.

This project will point the way to a new type of city, combining the advantages of decentralization with the advantages of centralization. It could prove the viability of the multi-purpose building as a major solution to the space problem.

Olin's stake in our cities isn't limited to experiments, of course. We produce lumber and flooring, plastic pipe and fittings, aluminum extrusions and Ramset® powder-actuated fastening tools for heavy and light construction, among others.

And, we might add, we're equally committed to seeing that our cities don't engulf our suburbs. Last year we acquired the Yeonas Company, one of the nation's largest suburban home builders, operating in the Washington metropolitan area.

Only recently we acquired Maryland Housing Corporation, a leading manufacturer of prefabricated homes, which extends Olin capabilities into the fastest growing segments of the housing industry—manufactured and modular construction.

We realize that improving our cities and preserving our suburbs is going to be a colossal job. But it *can* be done.

We have literally nowhere to go but up.

Olin

By Ann Ewing

Man mounts a global program to do something about the weather

Satellites, computers and remote stations are improving today's forecasts, which are good for only a day or two ahead

About 270 B.C. the Greek poet Aratus put some weather proverbs into verse. The custom he introduced has come down to us in rhymes such as:

"Red sky in the morning, sailor take warning;
Red sky at night, sailor's delight."

There is good science in back of such proverbs. For example, the color of the rising sun is deepened by atmospheric dust and moisture, both necessary for rain. At least for the regions in which they were formulated, such rules give man some idea of what is coming today and tomorrow. During the last century he has improved his accuracy, measuring and charting such quantities as temperature, pressure and wind velocity over large areas and trying to understand the dynamics by which storm, rain and sunshine develop, subside and move. Despite the scorn many of us have for official weather forecasters, most people in the United States today have a good idea of what tomorrow's weather will be. Yet those who want to plan a week or more ahead, as in agriculture and industry, still have to rely on statistical probabilities.

During the next decade the weathermen hope to improve their methods until they can predict accurately over large areas up to two weeks in advance. New knowledge and instruments—for example, satellites, computers and better understanding of the atmosphere—make the plan feasible.

Ann Ewing, free-lance science writer, was formerly on the staff of Science News.

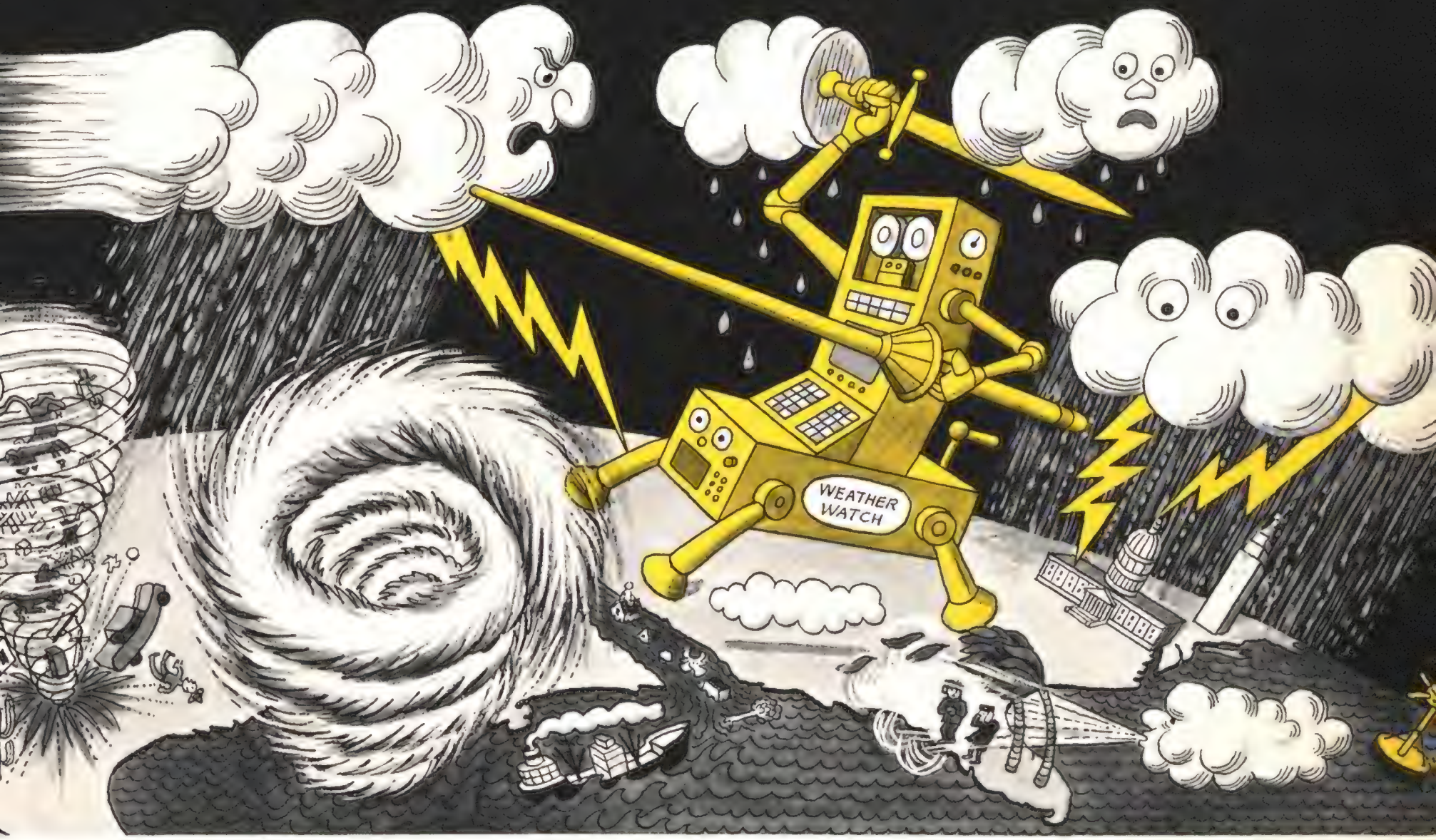
The first step toward realization of the hope is the World Weather Watch, planned and coordinated by the World Meteorological Organization. Eventually it will measure and record weather data from all over the earth and use them to make predictions. Right now it exists in intermediate form. Observation centers and communication links are gradually being improved and added to the network so that by the mid-1970s it should be nearly complete.

Today's weathermen have many hypotheses which should be tested. As in any science they construct a theory, make computations from it, then turn to observation and measurement to see whether the theory works. Now, though, the theories have outrun measurements, which are made in too small numbers and over too small a part of the earth—mainly over the land masses in the northern hemisphere.

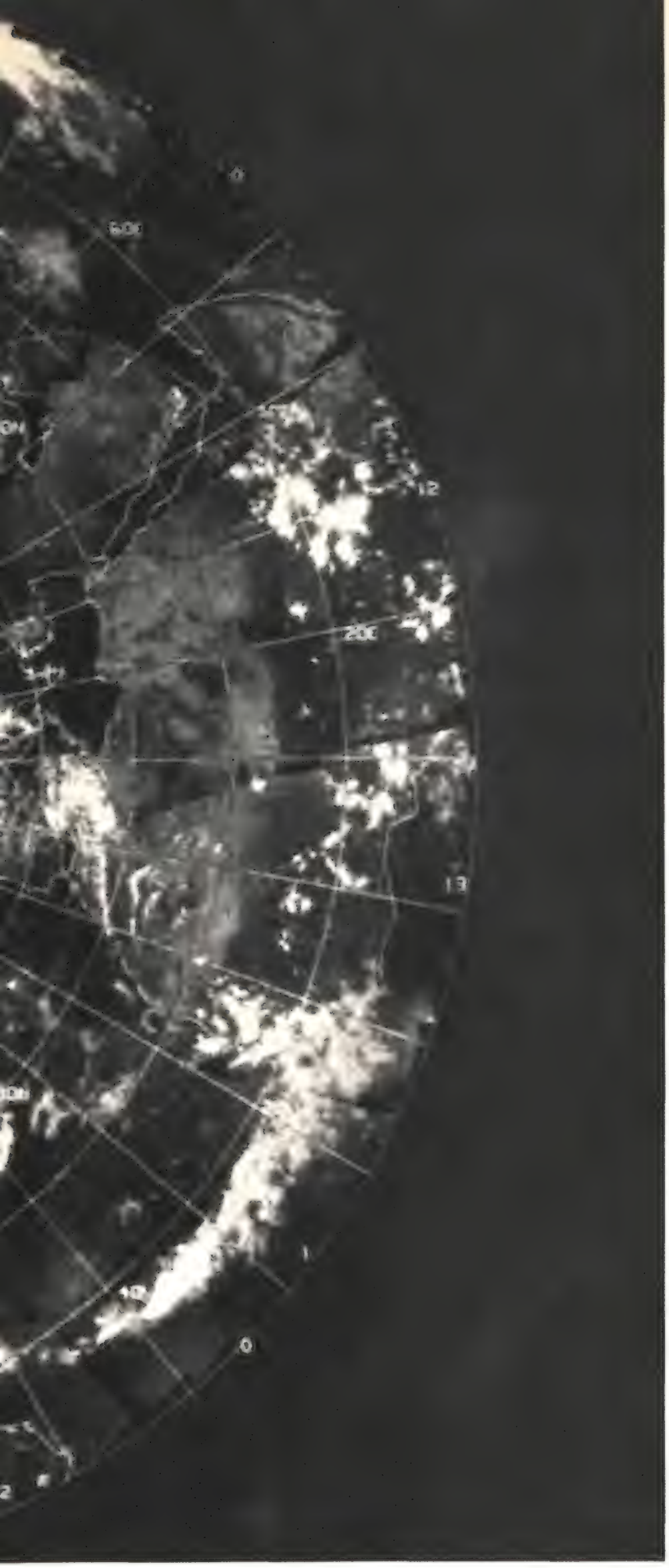
To tell weathermen what data they need and to help the World Weather Watch perform with maximum effectiveness are the purposes of an ambitious exploratory program that will occupy the 1970s. This is the Global Atmospheric Research Program (its acronym

Weather catastrophes—tornadoes, hurricanes, floods, blizzards, heat waves and the like—still come on unpredictable paths. Better observation and closer study should reduce the damage they do.

Drawings by James Flora



A satellite picture with grid and outlines added shows eight major storms. It was compiled from a computer tape that stored information from different views, then played back brightness and location to make this North-Pole view. Besides taking pictures, satellites record data from unmanned stations and radiation readings from which computers determine atmospheric temperatures.



is GARP) under which most of the nations of the world will cooperate in an effort to observe the atmosphere and, with appropriate computer treatment and mathematical techniques, to make predictions.

If it works as scientists expect it to, lives and money will be saved from storms, droughts, floods, heat and cold. Eventually—though that goal is more distant—it may show the weathermen how to alter the weather. They might learn to lessen the force of a hurricane, water deserts with rainfall and make snow fall where skiers want it instead of where cattlemen dread it.

The Global Program will build on two experiments completed last year. The Barbados Oceanographic and Meteorological Experiment (BOMEX) concentrated on a section of ocean about 300 miles square. Never before at sea—and rarely on land—have observations been made with such density and frequency. Weathermen are still evaluating the data. They are also still working on material from the Atlantic Trade Wind Experiment, in which four ships drifted about 1,600 miles with the winds that blow from Africa to South America.

Several different and parallel projects will go on from these forerunners to make up the overall Global Program. One is the First Tropical Experiment which will begin in 1973 or 1974 and will examine the weather in much greater detail and over a much larger area than did the Barbados experiment. Part of it may be a test of systems that can demonstrate problems to be expected later in the First Global Experiment. And a most important part of the total program will be improvement of atmospheric models that the weathermen use for their computations and predictions.

As is implied by the word "first," both the Tropical and the Global Experiment could have sequels, depending on what the early ones produce.

Several related projects will help the Global Program achieve its purposes even though they are not actually a part of it. One is the National Clear Air Turbulence Program. Others are air-mass studies now being carried on in many countries.

International efforts for the man next door

The Global Program is supported by 25 nations that signed up at a conference in Brussels last March. They are cooperating under the joint supervision of the World Meteorological Organization and the International Council of Scientific Unions. Many more of the 132 member nations of the World Meteorological Organization are expected to join up as plans progress.

Asked if the Global Program would have any effect on the guy next door, Dr. Jule Charney, Massachusetts Institute of Technology professor and chairman of the

U.S. Committee for the Global Atmospheric Research Program, said, "Yes, it definitely will. The effect will not be spectacular, but he will have more accurate forecasts for longer periods of time, and he can make his plans accordingly."

"I think GARP will improve every range of forecast," says Dr. Richard E. Hallgren of the Department of Commerce Environmental Science Services Administration (ESSA). "The primary improvement will be in medium- to long-range predictions from several days to a week or more. GARP is the natural way to approach this problem." Dr. Hallgren's organization is the leading government agency for the United States participation in both the World Weather Watch and the Global Atmospheric Research Program.

This degree of improvement will be valuable indeed. Although the United States has one of the world's most advanced weather services, each year it suffers catastrophic losses of life and property from such weather calamities as hurricanes, tornadoes, floods and blizzards.

Hurricane Camille, second strongest tropical storm on record, slammed into the Mississippi coastline on August 17, 1969, bringing a storm tide at least 24½ feet high. More than 75,000 persons were evacuated, and even so at least 144 were killed. As it dissipated its enormous energy, the storm veered unpredictably to the right and dumped its rains over Virginia and West Virginia. Flash floods killed at least 112 persons, probably many more because 41 are still listed as missing.

On February 9 and 10, 1969, a northeaster dropped up to 15 inches of snow on New York City and as much as 23 inches in Bedford, Massachusetts. At 11:00 p.m. on February 8 the New York forecast was "snow changing to rain." At 1:45 a.m. snow began and was not considered a major threat. Heavy snow warnings were first issued by the Weather Bureau at 5:00 a.m. on February 9.

The disaster tolls from such events could be substantially reduced by adequate warnings and proper precautions. Moreover, the impact of normal day-to-day, week-to-week and month-to-month changes in the weather on economic pursuits, if much more subtle, is no less profound.

In agriculture, the losses due to weather mount into the billions of dollars annually. They stem from a wide range of conditions:

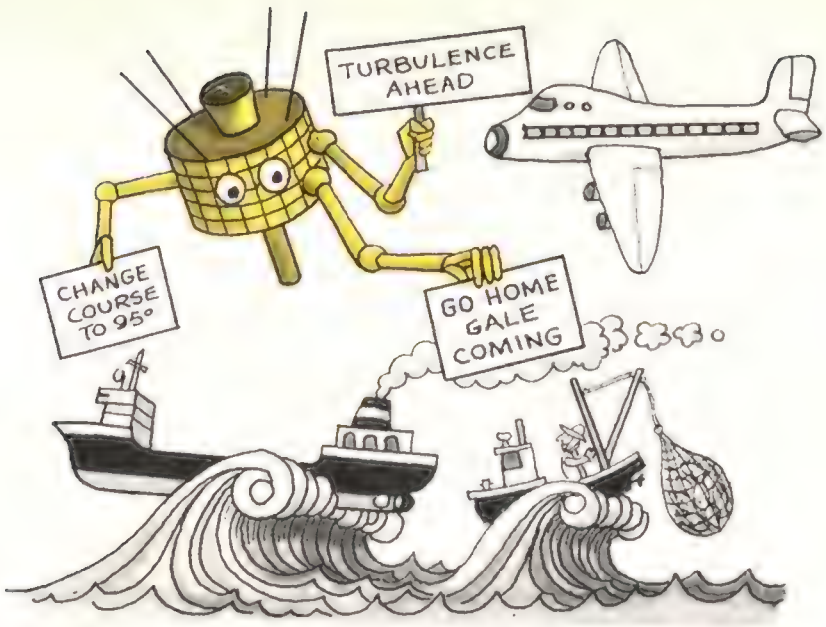
- Frost and hail destroy the crops of orchards and truck farms.
- Low temperatures and blizzards kill livestock.
- Improper timing of irrigation reduces yield.
- Excess or lack of rain forces multiple plantings.

With two weeks' notice of such events, the farmer could try to protect his crops, drive in his livestock or give them extra feed, reduce or increase his irrigation, and advance or delay his plantings.

The construction industry loses more than a billion dollars a year to weather. Strong winds and heavy rains damage incomplete structures. Materials such as concrete are spoiled by freezing temperatures and rain. Labor is inefficiently used and schedules disrupted.

In addition to the many lives lost in accidents, the transportation industry loses hundreds of millions of dollars annually to weather. More accurate and longer-range prediction would enable optimal planning of ship routes on the high seas, more efficient

Costs in the construction industry include damage to unfinished structures by wind and rain and to materials by unexpected cold and heat.



Reliable, long-range warnings of abnormal storms would let ships and planes choose better routes and thus operate more safely and efficiently.

scheduling of aircraft, safer trucking and more judicious commuting in cars and buses.

The fishing industry, retailing, water-resources management and recreation are other examples in which the safety and efficiency of operations can be increased by improved weather forecasts.

Since weather is worldwide, the economies of other nations are similarly affected. Among the developing nations the weather exerts a profound influence on agricultural activities vital to economic survival.

Available weather data are barely adequate over 20 percent of the earth, inadequate or absent over the remainder. Meteorologists agree that global observations are absolutely essential if accurate predictions of weather two weeks ahead are to become a reality.

The technology required to obtain these observations, especially over the oceans, presents formidable problems. However, by using various combinations of observation platforms—satellites, buoys, ships, remote land stations, aircraft, constant-altitude balloons and rising balloons—a weather system can have the full potential to observe and collect daily comprehensive data about the atmosphere of the entire earth.

New instruments on board such weather satellites as Nimbus 3 and Nimbus 4 have shown that satellites can collect much of the information. The Nimbuses can take cloud photographs by day and night, locate constant-altitude balloons to determine wind patterns, interrogate buoys and land stations, and detect infrared radiations.

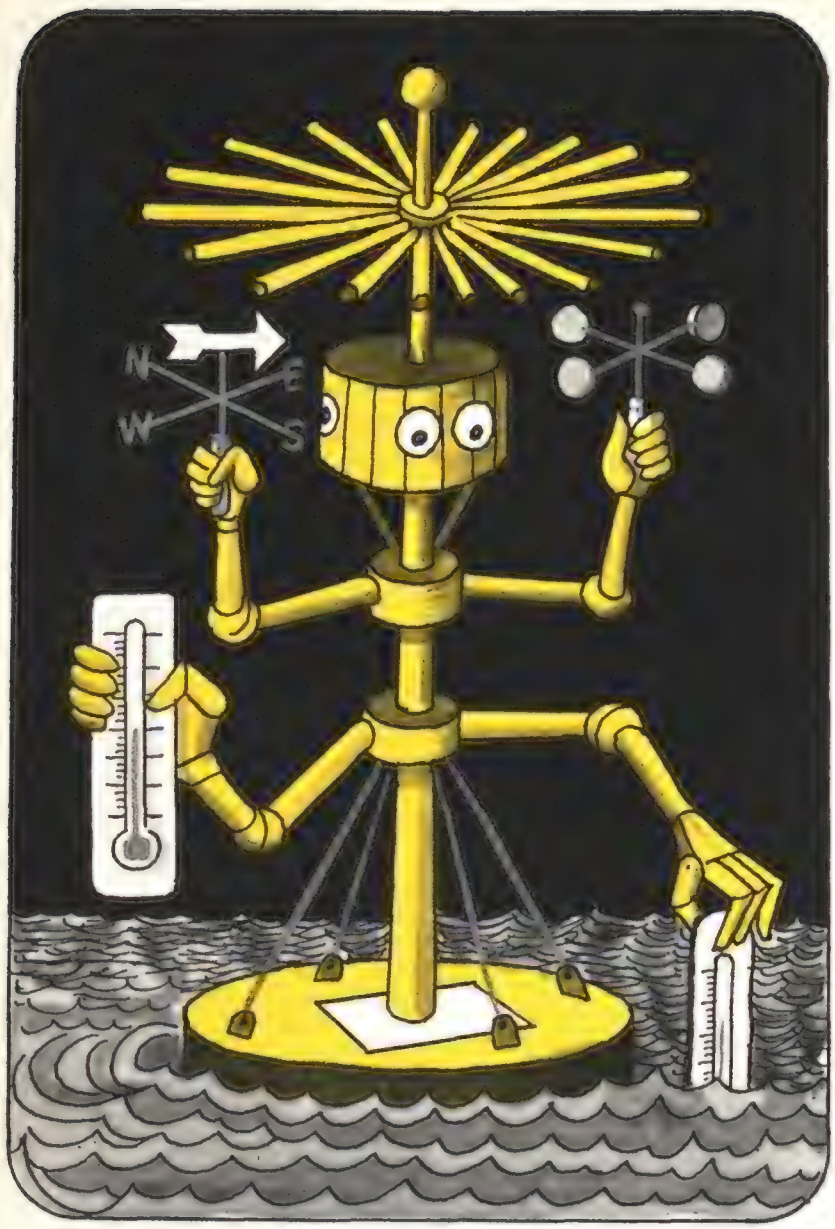
Within two months after the launching of Nimbus 3 on April 14, 1969, infrared spectrometer data were being processed and used operationally in the numerical weather prediction unit at Suitland, Maryland, where Environmental Science Services Administration has its World Weather Center. Nimbus 4, launched on April 8, now contributes its data.

The infrared wavelengths are those by which radiant heat is transmitted. Detectors on the satellites continuously sample this radiation at eight specific wavelengths. From the data, calculations reveal the vertical distributions of temperature, ozone and water vapor in the atmosphere. Temperatures determined from satellite measurements have been confirmed by comparison with those measured with equipment borne aloft by rockets and balloons. Satellites are actually better than the latter, however, because they give an average over an area rather than for just a narrow column of the atmosphere. Moreover because the same satellite makes repeated measurements as it moves, its readings can be compared more accurately than can those made in different places by different thermometers.

Another satellite mission is to gather information from other kinds of atmospheric sensing platforms. The satellite will determine the position of the platform, store the data it receives and transmit them to a ground station on command.

The two 1969 forerunners of GARP were conducted in the Atlantic to investigate processes by

Drifting, constant-altitude balloons deliver data on demand to satellites, which also determine balloon positions that disclose wind patterns.



Unmanned buoys monitored by satellites can provide weather information on remote reaches of the ocean now covered by too few observation stations.

which the sun's fierce energy beating down on tropical waters is exchanged between the sea and the atmosphere. Solar energy absorbed by tropical oceans provides the major driving force for atmospheric circulation. Sea-air interaction is the first in the chain of events by which it does so. An understanding of this sea-air interaction is essential to the achievement of economically useful two-week forecasts.

The Barbados experiment gathered a wide range of oceanographic and meteorological data on sea-air interaction. This program has been likened to a museum guard with a clicker counting the number of people who come in and out. But what was measured was heat transfer instead of people, and 90,000 square miles is a lot of museum.

The Barbados area was only about 1/100 of that to be covered in the upcoming Tropical Experiment. The program will last about three months and start no earlier than mid-1973.

Three or four satellites, about 25 ships, at least seven aircraft and many buoys will cover an area extending 1,000 miles or so north and south of the equator, from Africa to South America and the Caribbean and possibly over some of the adjacent parts of the continents. All will be fully instrumented for atmospheric and oceanographic observations.

"Fortunately," says Dr. Douglas Sargeant, executive scientist for the U.S. Committee for the Global Atmospheric Research Program, "the small-scale convective motions in the tropics appear to be organized on a large scale. These organized patterns of clouds are commonly called cloud clusters. It is the purpose of the First Tropical Experiment to understand the interactions between cloud clusters and the global circulation.

Cloud motions on large and small scales

Photographs taken by satellites synchronized with the earth's rotation and thus hanging over a single spot on the surface show that cloud-cluster processes are a key mechanism by which energy is redistributed through the atmosphere. Since circulation in the tropics is strongly linked by exchanges of heat, moisture and momentum with air motions at higher latitudes, knowing its condition is important to weather prediction in temperate zones.

Among the clouds are vertical air currents (convection currents) in which hot air rises, expands, cools and falls. In temperate zones when the motion is violent enough, such patterns make thunderstorms, and the cooling of the air makes raindrops and hailstones. In the tropics the small volumes in which the heat-driven convection currents occur are called convective cells.

The convective cells within cloud clusters have dimensions of half a mile to five miles. The cells occur in groups that measure 5 to 50 miles across. The cloud-cluster dimensions are 50 to 500 miles. Finally, there are recently discovered tropical planetary waves, motions of the atmosphere that extend all the way or most of the way around the earth. They have wavelengths between 1,000 and 5,000 miles.

The Tropical Experiment also will examine some of the instruments, data-gathering and -transmission systems, and organizational methods for the First Global Experiment, scheduled for 1975 or 1976.

Other field experiments, although smaller in scope, are important to the Global Program. Data from the National Clear Air Turbulence Program will have special relevance to energy dissipation. Also closely allied with the aims of the Global Program are scientific studies in the changes of air masses as they move from land to water areas, the boundary ex-

changes of heat, moisture and momentum, and trade-wind experiments.

The entire success of the Global Atmospheric Research Program, however, depends fundamentally on being able to make an accurate mathematical representation of the atmosphere as it exists and changes. Atmospheric models, as such representations are called, are thus as much a part of the system as satellites and sensors. These mathematical models must incorporate as many of the essential natural processes as possible. To do so realistically the equations fed into the computers must be based on known physical principles and there must be sufficient data to permit accurate solution of the equations.

Only when the models are global can computer simulation give continuing guidance on global data requirements for different observation platforms that can take worldwide readings of pressure, temperature, humidity and wind velocity. And only then will weathermen be able to make predictions for longer periods and assess the possible and probable consequences of human interference.

For this reason, within the next five years U.S. participation in the Global Program will concentrate heavily on mathematical models and simulation.

Among tests proposed for the First Tropical Experiment are the following:

► Small drifting and moored buoys will measure surface wind, pressure, air temperature and sea surface temperature, relaying information on demand to a satellite with a recording and locating system.

► A Nimbus satellite will interrogate and track hundreds, maybe thousands, of drifting, constant-altitude balloons; its microwave and infrared sensors will determine the vertical distribution of temperature and moisture. The next generation of operational polar satellites will also make temperature and moisture determinations.

Weathermen plan to have two synchronous satellites—one over the Atlantic and one over the Pacific—available for the First Tropical Experiment.

Polar satellites sample weather as the earth rotates inside their orbits. Some are operating quite successfully now; better ones will be aloft soon.

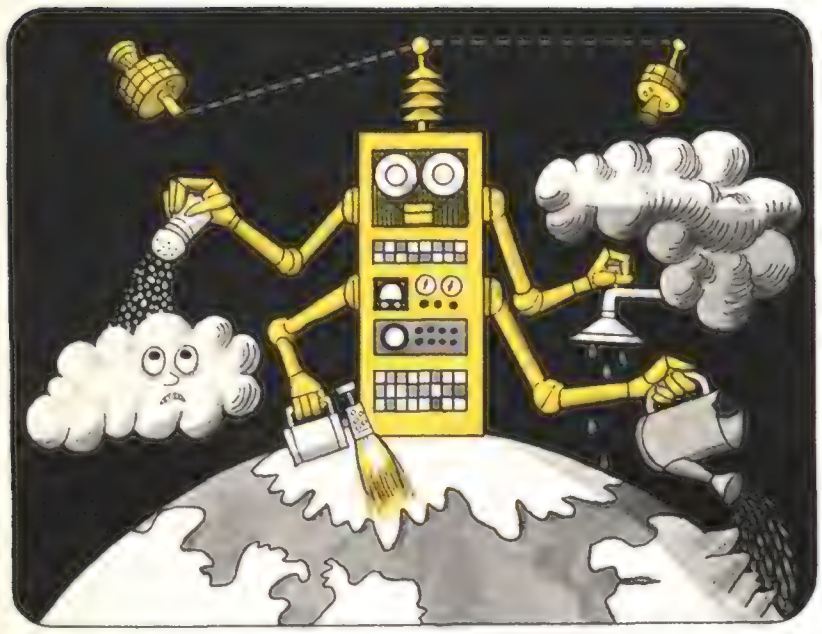
► Synchronous satellites will gather data. Two Geostationary Operational Environmental Satellites, if successfully launched in 1972 and 1973, will hang over the Atlantic and eastern Pacific oceans before the Tropical Experiment is underway.

Other nations, notably France, West Germany, Japan and the United Kingdom, are developing meteorological satellites but do not have any in operation. The USSR however, has had its experimental system METEOR, which uses the Cosmos series of satellites, in operation for three years.

Selected information obtained from this system including visual and infrared pictures of clouds, is exchanged with the United States over a special communications link between Moscow and Washington.

Both the Global Atmospheric Research Program and the World Weather Watch stem from a proposal made in 1961 by Ambassador Adlai Stevenson to the U.N. General Assembly. In the light of developments in outer space, President Kennedy envisioned them as

Global weather program



After good description and accurate prediction the next step forward may be weather control, now used on a small scale to subdue airport fog.

a means of fostering international cooperation in atmospheric study for the benefit of mankind.

The World Weather Watch includes three World Meteorological Centers, linked by fast communications channels, which are now in operation—in Washington, Moscow and Melbourne. These are being supplemented by regional meteorological centers, of which there will be 22.

The World Meteorological Centers need only upgrading of their computers to prepare the full range of global weather predictions expected for the international plan. The United States will use its tropical meteorological center at Miami as one of the 22 regional centers. It will provide analyses and predictions for the tropical ocean areas as well as for nations in the Caribbean area and northern South America.

The United States is mutually responsible with West Germany, Brazil, Canada and Japan for communications links among those countries, and they have been established.

Australia and Japan are setting up a link connecting Melbourne and Tokyo. India and the United Arab Republic are establishing communications centers for direct links between New Delhi and Cairo and from each to Moscow. Kenya is establishing a communications hub at Nairobi for links to Cairo and Kano, Nigeria. The last two centers are being set up with aid from the World Meteorological Organization volutary assistance program, which assists developing nations in their participation in the World Weather Watch. Using lists submitted by the World Meteorological Organization, the United States allocated $1.3 million for equipment, services and training projects during fiscal 1969.

The funds went to 17 equipment and technical service projects in 15 different nations and to eight long-term fellowships, each of which permits a qualified individual from a developing nation to obtain an academic degree in meteorology at a U.S. university. The nations receiving U.S. contributions are primarily in Central and South America, but some support goes to Africa and southeast Asia.

We may control weather and pollution

The potential benefits of the Global Atmospheric Research Program extend well beyond those resulting directly from more accurate long-range predictions. A problem of great public concern today is pollution of the atmosphere and disturbance of its composition by wastes poured into it in ever increasing amounts. These include much carbon dioxide from combustion and many small particles from such substances as smoke. Man must assess materials in the atmosphere so that he can make some rational choices. Then he can take preventive and corrective measures to avoid intolerable concentrations of harmful materials.

Computer simulation experiments, employing models of the types that will be used in long-range prediction, offer the best hope for understanding how weather is affected by various types and amounts of pollutants.

Man's alteration of weather and climate can be deliberate as well as unintentional, and it is possible to modify the weather in beneficial ways. Modification is already being used successfully on a small scale when supercold fog at airports is seeded with dry ice to precipitate the moisture.

When Charles D. Warner said, "Everybody talks about the weather, but nobody does anything about

it," he was funny because weather was a great imponderable, far beyond understanding and control. Since his time matters have progressed, and we can describe the weather accurately. Air masses and cold fronts have joined frosts and rainstorms as dinner-table conversation.

Yet after centuries of concern, our knowledge of atmospheric movements is relatively elementary, and we cannot predict accurately more than a day or two ahead. In this direction we plan to make a giant step during this decade. With knowledge from the Global Atmospheric Research Program the World Weather Watch should be able to describe the weather quickly in all parts of the globe. If we are successful we will be able to use this information to make accurate predictions up to two weeks in advance. And if we are very successful we may know enough about the atmosphere and weather and climate to make large-scale changes.

The eventual purpose is global observation, quick description, accurate prediction by a system that involves the whole earth and all of its nations.

By Paul E. Desautels

A top collection for experts —and amateurs—to envy

Elizabeth Taylor no less than the nation's army of rockhounds can find something to admire in the Smithsonian's minerals

The author, supervisor and curator of the Division of Mineralogy, Smithsonian Institution, looks over some newly acquired specimens in his office. Photographs of all specimens by Lee Boltin

Colonel Washington A. Roebling of New Jersey, were he alive today, would very likely show no surprise in discovering that he had built almost as important a monument to himself through his hobby as he had through his profession. He well understood the importance of his hobby. Best known to the public as the innovator of twisted-wire cable and the builder of the Brooklyn Bridge, he also happened to be a very talented collector of mineral specimens. During his lifetime (1837-1926) the collection he assembled became so important to science and to other collectors that his son later felt it mandatory to attend to its preservation. John Roebling accomplished this in 1926 by giving the collection, and an endowment for its enhancement, to the Smithsonian Institution. He expressed the wish that it would be preserved, would be used, would grow and generally prosper. Beyond all expectation it has done these things as a part of the National Collection of Minerals, so that it is now—while preserving its own identity—several times as large as it was and of primary importance among the world's mineral collections.

The reasons for collecting minerals, as for collecting any objects, are varied. Whatever the reasons, mineral specimens are particularly suitable for the attention of a collector because they possess a fascinating variety of characteristics, beautiful forms and colors, and because of their comparative permanence and indestructibility under ordinary care.

Historically, natural history museums everywhere have become the ultimate repositories for many private mineral collections. They have thus found them-

Opposite: This specimen of varicolored tourmaline (1½ times actual size) is still embedded in its matrix material. It comes from Minas Gerais, Brazil. Other minerals are from 1 to 3 times actual size.

selves charged not only with the care and use of all the major reference collections in the world that are basic to research in the material sciences, but also with attempting to cater to the aesthetic and educational needs of a large and growing fraternity of private collectors. The National Museum of Natural History, part of the Smithsonian Institution museum complex, is living proof of all this. Its mineral collections, perhaps unequalled in the world, serve multiple scientific, aesthetic and educational purposes.

The process of assembling them was begun by James Smithson himself when he bequeathed the funds for starting the Institution bearing his name. He was, among other things, a mineral collector who had formed what was, for his time, an important collection of minerals. Eventually his collection was brought to Washington and given into custody of "The National Institute," a local scientific institution. Later the collection was transferred to the fledgling Smithsonian Institution for display in its first building. The destructive fire of 1865 took much of the building's contents but not before the collection had generated an interest and established a tradition which would lead to the future mineral collections.

Assistance came from all directions. For example, the new law of 1880—still operative 90 years later—provides that "all collections of rocks, minerals, soils, fossils and objects of natural history, archaeology and ethnology, made by the Coast and Interior Survey, the Geological Survey, or by any other parties for the Government of the United States, when no longer needed for investigations in progress, shall be deposited in the National Museum."

Although slowly at first, the assemblage of mineral specimens grew until, by the time it was transferred to the new Natural History Building just before World War I, it was an appreciable collection. By comparison, the great American collections at Harvard

Hexagonal calcite crystals, stained by iron oxide, came from mines in Cumberland, England, years ago and are now considered classic specimens.

The marquetry-like pattern at right was produced by slicing a nodule of malachite and polishing it to reveal its radial growth and concentric banding.

and Yale, at the Academy of Natural Sciences in Philadelphia and at the American Museum of Natural History in New York, badly overshadowed it. And it was not at all comparable to the great collections in London, Paris, Vienna and elsewhere in Europe. But with an impressive new home and a renewed interest in its development, growth did begin to accelerate.

In 1916 the mineral samples left over from the great Panama Pacific International Exposition were acquired. In 1918 the United States Naval Academy gave its collection into safekeeping at the Smithsonian. There were also many additional private gifts during the early 1900s. But in 1926 lightning struck the collection twice, figuratively speaking. Two private collections were added in that year which instantly catapulted the Institution's mineral holdings into international prominence. They were the two finest private collections in the United States at that time —the collection of Frederick Canfield jr., and the aforementioned one of Colonel Washington Roebling. These acquisitions were to have a lasting effect on what is now called the Department of Mineral Sciences, National Museum of Natural History.

The Canfield collection had been started by Mahlon Dickerson of Dover, New Jersey, in the early 1800s. It was a small but good collection which later became the property of his nephew, Frederick Canfield. He continued the tradition by collecting so avidly and well that, after his death, his son respected the collection sufficiently to keep it intact. The son in turn began his own separate collection. As a mining engineer and as a result of his excellent mining connections, he was able to acquire fine groups of specimens from several of the active mining camps of the time. When he died in 1926 the three-generation collection was willed to the Smithsonian along with an endowment fund for its improvement. The small curatorial staff of the museum's mineral collection was overwhelmed by the sudden burden of packing, transporting, cleaning, labeling, cataloging, arranging and storing the large collection. Before they could recover, the second lightning stroke hit them: The Roebling gift arrived with its 16,000 specimens and the work multiplied several times over.

From chaos to nearly 130,000 specimens

From the sudden chaos of these two major additions rose a truly great institutional collection. The pace now quickened. An increasing number of individual specimens and collections were added, some with the aid of the Roebling and Canfield endowments. In 1965, for example, the Carl Bosch Collection of 30,000 specimens was acquired partly by gift and partly by purchase from his heirs. It is impossible to make note of each of the gifts, purchases, exchanges and other transactions which have gradually enlarged, changed and improved the collection. But the results are obvious. Approaching 130,000 specimens, the Smithsonian's collection is among the largest in existence and its value for educational and public exhibition purposes and as a research tool is now unsurpassed.

What do people see when they come to visit this exceptional aggregation of mineral specimens? Most accessible to the usual museum visitor is the display collection in its well-lighted, attractive and modern exhibit hall on the second floor of the Museum of Natural History. Impressive as it is, this display collection represents only between two and three percent of the total number of specimens. Admittedly, most of these pieces found their way to public display because of exceptional beauty or as being unusually good representatives of their types. It is possible to walk through the exhibit marveling at "the largest" or "the best" or "the

most valuable" or "the most unusual" specimen of this or that in the world. The exhibit collection purposely uses little of its space or specimens to expound on the facts, meanings and insights of the science of mineralogy. Because the Institution is blessed with such rich collections, the decision was made to use all the available space for showing as many of the specimens as possible. Explanatory showcases are kept to a bare minimum and give just enough information for the visitor to understand what he sees. Unexpectedly, the finest examples of each species in the collection are not necessarily on public exhibit. This is not intentional, but improvement of the collection is so continuous and rapid that there is always a large accumulation of specimens waiting to replace and improve upon those in the exhibition cases.

And what of the more than 97 percent of the collection not on public exhibit? It lies elsewhere on the same floor of the building. Behind the doors labeled "authorized persons only" lie the laboratory and storage facilities of the Department of Mineral Sciences, of which the Division of Mineralogy is part. Tucked in among the laboratories and offices is a well-secured storage room containing the larger part of the mineral collection. The security is essential, not only because of the high market value of many of the specimens but also because many of the non-marketable specimens are irreplaceable and thus of great value to the science of mineralogy. Specimens are stored in rows of standard museum cases containing 18 drawers, and there are 2,520 of them in the room. It is a rather impressive sight. Within the drawers the thousands of specimens are arranged in individual pasteboard trays. Each is numbered and labeled, and there are indexes, cross indexes, catalogs and other filing aids, so that specimens and information about them can be retrieved as quickly and as efficiently as possible.

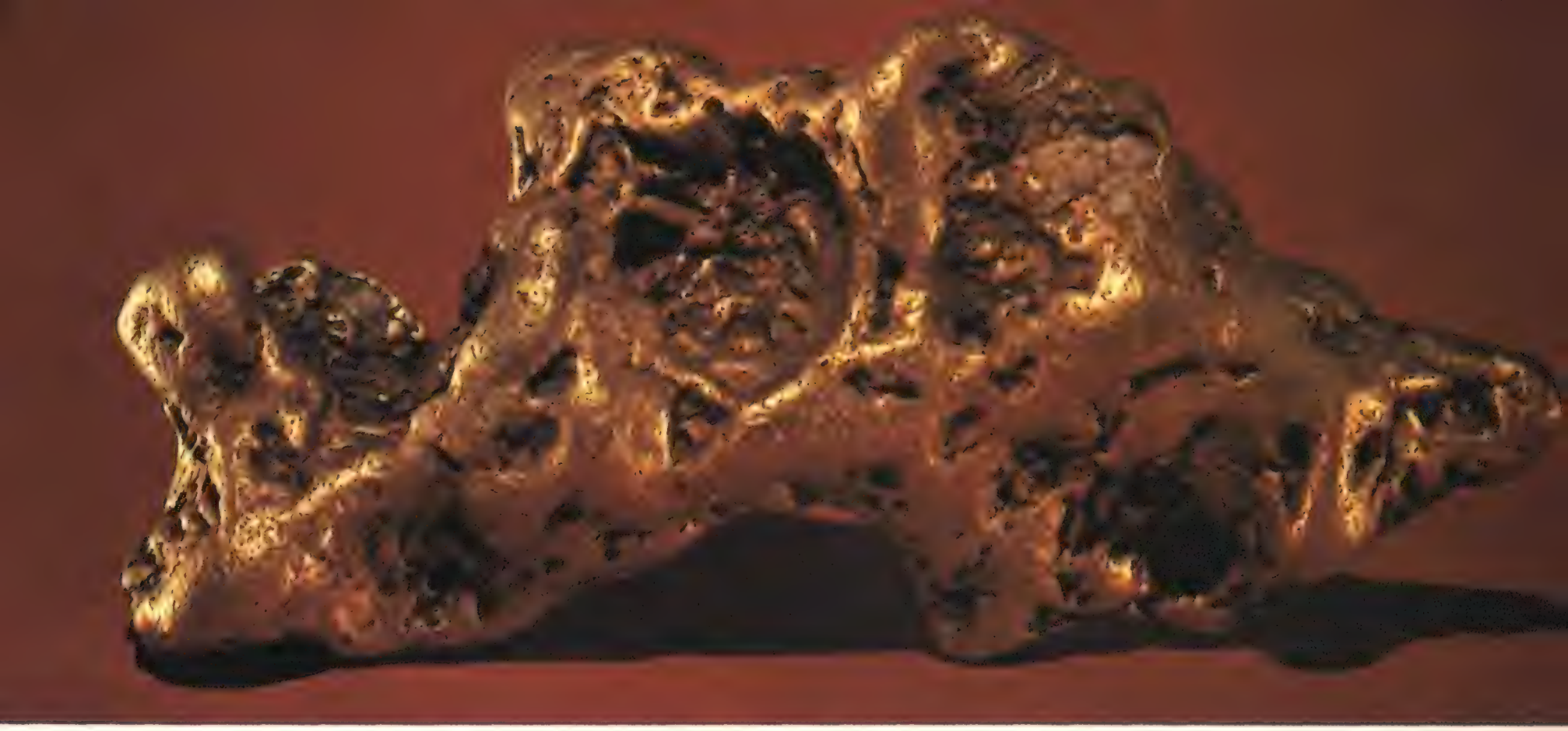
A classic example of barite from the Cumberland mines in England. Collectors can still find such pieces from time to time at a dealer's or in old collections.

"Storage" doesn't mean gathering dust

When the word "storage" is used in referring to the mineral collection it gives the impression of great quantities of specimens sitting in drawers, slowly gathering dust, and resting there—untouched by human hands—since the day of their incarceration. Now and then rumors drift in of tales told about the quantities of fine mineral specimens stored away and gathering dust in the Smithsonian's attic, but nothing could be more remote from the truth. There is no attic for the minerals, and nothing in the collection lies inactive for long. There are no idle accumulations of material, because specimens of little or no value to the collection are exchanged, as quickly as possible, for needed additions.

Wandering into rooms adjacent to the mineral storage area, an authorized visitor would find himself in a maze of modern laboratories—an x-ray laboratory, a chemistry laboratory, an electron microprobe laboratory, another chemical laboratory, a high temperature-high pressure laboratory, a small scientific library and so on. Very quickly it becomes obvious that the bulk of the business of the Department of Mineral Sciences is basic research and not the exhibits. The purpose for keeping the other 97 percent of the collection becomes clear: the collection answers continuous demands for research samples from bona fide professional investigators in the Smithsonian and around the world. Every day the mail brings new requests for research material difficult or often impossible to locate elsewhere.

In order to keep up with the demands, and at the same time conserve these important reference collections as much as possible, each request is screened. Its importance, the feasibility of the project and the possibility that material might be obtained earlier elsewhere are considered. Then, as is most often the case, samples are sent. In return the researcher is requested to include catalog numbers of specimens used if the work should result in scientific publication. This is important in conducting any significant mineralogical research. Over a period of many years, then, a large number of specimens in the collection have become basic reference pieces for the science. Special indicators and indices are used to point out the exact status of these specimens. There is one other small group of specimens bearing its own special red tags and its own



This 82-ounce gold nugget is from an old California placer mine. Since most large gold nuggets are smelted down, few of this size have survived intact.

index. This group is so important that it also has its own separate set of drawers marked "Emergency." In case of fire or other catastrophe, these drawers would be rescued first. They contain the type specimen collection. In mineralogy, the type specimens consist of the actual fragments from which some mineralogist took the material on which he performed all the complex laboratory work involved in describing a new mineral species. All mineral description and taxonomy is based on material like this. The Smithsonian makes a fetish of catering to the world's scientists, so that considerable time and effort are spent in building and maintaining a collection of this type specimens which are jealously guarded on their behalf.

Children and scientists ask questions

Each delivery of the day's mail brings to the Department of Mineral Sciences an assortment of letters asking specific questions about minerals. The inquiries come from a gamut of sources ranging from school-age children to professional scientists in all phases of science from archaeology to zoology. In the same mail there is likely to be a package, or perhaps several, containing mineral samples and a plea to look them over and report to the sender what they are. All of this is understandable because the science of mineralogy has moved on to new and more complex research and deeper understanding, while gradually losing communication with the general public. More than ever the knowledgeable museum curator is called on to interpret between the layman and the scientist. Requests are increasing, too, for the loan of illustrative educational specimens and for other special loan exhibits to be used in local museums and in hobby shows of gem and mineral clubs all over the country.

The life of a good mineral specimen is precarious, to say the least. And yet many do survive and make their way to ultimate sanctuary in a museum, assuming that it is a museum prepared—as few are—to receive and care for them.

Just as the great art museums of the world differ in their emphasis, depending on which private collections gravitate to them, so the mineral museums have specialties. The Smithsonian collections are remarkably good in every chemical grouping featured in most modern systems of mineralogy. Former old classic specimens are present in abundance, as are the sparkling newcomers. There are some suites, however, that are as good as the best anywhere and some that are unsurpassed elsewhere. Thanks to both the Roebling and Canfield collections—with assists from other sources—the mineral specimen suites from the famous zinc mines at Franklin, New Jersey, are the finest in existence. There are several thousands of these specimens, representing almost all of the more than 150 species known from the mines.

The Brazilian specimen suites are also extraordinary, in part because of the many fine gem minerals available from mines in that country. Again, thousands of specimens are here and among them the largest and finest gem kunzite crystal, weighing over

16 pounds. An eight-pound crystal of fine gem-quality aquamarine, other exquisite crystals of beryl, chrysoberyl, brazilianite, hematite, tourmaline, euclase, topaz and many other species, make up the most complete and highest-quality suite in any museum.

Two generations of Smithsonian interest in the mines of Mexico has led to the assembling of an unsurpassed suite from mines south of the border. It is interesting that superb specimens and new species are coming out of Mexico today in quantity and quality unknown years ago. The Smithsonian is attempting to keep abreast of all of these discoveries so that there will be as complete and fine a suite of Mexican minerals preserved for posterity as possible.

As a whole, the suite of mineral specimens from the rich copper-lead-zinc mines at Tsumeb, Southwest Africa, is the best and most complete assembled anywhere. The Kegel collection furnished the bulk of it but many additions have been made from various sources by exchange and purchase. Similarly, the extremely productive copper mines at Bisbee, Arizona, are represented in great abundance. The James Douglas collection—gift of the Douglas family—supplied the bulk of this suite, but large numbers of specimens came from the Roebling, Canfield and other collections. Now the suite is the finest anywhere.

Proustite is called "ruby silver" because it is red and is a silver mineral. All the best specimens came from Chile long ago and bring very high prices.

How the collection relates to others

The suite of Arizona wulfenite specimens in gaudy shades of red, orange, brown and yellow is the most spectacular to be seen anywhere, thanks especially to purchases from the Haag and Oboler collections. The Hubert Seaman, Frederick Smith, Canfield and Roebling collections together contained what is very likely the finest suite of zeolites and associated minerals to come out of the famous occurrences in the vicinity of Paterson, New Jersey.

Fortunate as it is to have all these strengths detailed here, the collection goes far beyond these unsurpassed suites. The British Museum, with its Ashcroft and other collections, has a magnificent suite of Swiss minerals. Museums at Bern and Zurich in Switzerland have excellent collections of their country's minerals. The Smithsonian collection of these Swiss specimens, while not better, need make no apologies. No museum can approach the British Museum when it comes to the incomparable suites of British minerals. Our own may be second-rank, but are hardly second-rate.

After such a glowing recitation of the contents of the National Collection of Minerals, which is by no means a complete account, it seems somewhat out of place to mention specimen deficiencies. They do exist. For example, Russian minerals, except for a scattering of old-timers and a sampling of recently described research material, are conspicuous by their minority presence. Argentina, China, Madagascar and Egypt, among others, are poorly represented. Research value of the collection would be strengthened considerably if there were more type specimens. Even though the type collection is large—among the top three—it lacks large numbers of specimens it should have. Summing up, our goal is to have the most representative collection possible for all purposes—scientific, aesthetic, educational and archival. It would, theoretically, be necessary to have a sample of every species from every occurrence in the world—and on the moon. This is a physical and practical impossibility. However, since it is the goal, it means that the National Museum of Natural History has a project on its hands sufficient to last several lifetimes. Already, several lifetimes have been spent getting the collection to where it is now.

Right: This chunk of iron ore with its bouquet of Millerite (a nickel sulfide) is as elegant as any creation of the great Russian court jeweler Fabergé.

Amethyst is a purplish variety of the very common mineral quartz. Though these crystals are not of gemstone quality, they are appealing to collectors.

Crystals of epidote (a silicate mineral) from Austria may be a foot long, but this exceptionally well-formed specimen is only 1½ inches across.

By Frank Sartwell

Mr. Kite-maker thinks of 'the damndest things'

Paul Garber of Washington lures thousands of sane citizens into recapturing a childhood joy—and taking it seriously

At first acquaintance, Paul Edward Garber seems an unlikely Pied Piper. He is no Aragorn son of Arathorn, waving a fabulous sword, but a stocky man of 70, garrulous, salt-and-pepper haired, devoted to such quiet pursuits as the study of history and the making of model airplanes. He calls his wife, Irene, "Buttons," for obscure reasons. (Only the couple's best friends are allowed this liberty.) They have three children, eight grandchildren and three great-grandchildren.

Yet the citizenry does gather at the call of this suburbanite. Thousands saw his brainchild, the Smithsonian's first kite-flying festival on Washington's monumental Mall three years ago, even though they knew the activity was squarely against the law. The police looked on happily. This summer the ancient law has been rewritten to make it legal to fly kites within the nation's capital. (Oddly enough, it is still illegal to play bandy or shindy there. That provision was not changed because no one was quite sure what these two crimes really were.)

Now Historian Emeritus of the National Air and Space Museum, Garber is officially retired, comes to work when he feels like it and flies (of course) all over the country lecturing on the history of flight. His credentials here are impeccable, stretching back to the Wright brothers and a pair of scarred knees acquired in the crash of his homemade kite glider in 1915.

Frank Sartwell wrote about Dr. John Calhoun and his crowded mice in April's SMITHSONIAN

At four or five, he was the proud recipient of an "ordinary two-stick kite" with his name writ large on it. The kite-maker, his uncle, got it aloft for him at Ocean City, New Jersey.

"He handed me the line. It was pulling so strongly I couldn't hold it but I certainly wasn't going to let go, so I began running after it. It was a seaward breeze and here I was headed for Europe, but I was darned if I was going to lose my kite. So I was splashing into the surf when my uncle finally caught me."

A few years later, in 1909, Garber's father, an art dealer, brought him to Washington for a visit, and the nine-year old saw the Wright brothers fly at nearby Fort Myer, Virginia. After that, kites and planes formed his career. He was one of those boys who hang around museums, and Garber's museum was the Smithsonian. There he saw an early model of a two-wing glider, and built an imitation of it which he flew as a kite.

"It flew all right, and looking up at it I thought how much fun it would be to be in that thing." So he made one five times as big—20-foot wing span—gathered all the neighborhood boys and all the neighborhood clotheslines and set out.

"At the big field, the boys all pulled and I began to

Garber holds a kite he built from the Wrights' specifications. The brothers designed it in 1899 to test their system for flight control.

run and, sure enough, I got off the ground. I remember how funny it felt when I could no longer touch the ground. My friends were so astonished that they stopped pulling and the thing sank backwards." The glider was smashed, but Garber, typically, rebuilt it and tried again. This time he adjured the members of the launch team to keep running, no matter what.

As the group set out across the field, the boys heaving and Garber hollering at them not to stop, he lifted and got up to perhaps 30 feet. It felt like a thousand. But the boys didn't stop—until the whole gaggle of them fell over a small cliff, jerking the glider higher with the force of the fall. Garber soared on over his tangled friends, lifted over a line of trees, crossed the street and came down very hard on the far side severely banging his knees but saving the glider.

That did not end his interest in aviation. Garber tried to become a flyer in World War I, but in 1917 was too young to get in without parental approval, which was denied. The next year he enlisted in the Army and applied for flight training but the Armistice was signed before he was scheduled to solo. After the war he signed up with the fledgling airmail operation at College Park, Maryland and scrounged enough instructional time to solo.

Throughout this time his interest in the Smithsonian continued and in 1920 he joined the institution to prepare museum specimens—his craftsmanship as a model maker proved useful. Called to active duty in the Navy in the next World War, Garber was naturally put in charge of making recognition models for training new pilots and gunners. And he was suddenly back in the kite business.

The problem was how to provide antiaircraft practice aboard ship when far from land-based airplane-towed targets. Garber's kite, a special design that could be maneuvered on demand, would loop and zoom above a ship, and would die most satisfactorily when hit in a vital spot. After convincing some doubtful admirals, he was ordered to crank up a kite-making operation. He toured bases, driving a jeep load of kites, training dubious sailors how to handle the kite and reel. Each time a ship docked a detail of swabbies was ordered ashore to fly kites.

After the war Garber was made the first curator of the Smithsonian's newly established National Air Museum. He recalls the final solution of a *cause célèbre,* based on an honest dispute about whether the Smithsonian's Secretary, Samuel P. Langley, had actually developed the first airplane "capable of flight" before the brothers Wright. The way was cleared for the Smithsonian to obtain the Wright plane (see SMITHSONIAN cover, May), which had been in England for 20 years.

Inevitably, Garber was put in charge of receiving the plane which was being brought from London on the liner *Mauretania* due to dock in New York. He made all arrangements, and then the dockworkers went on strike. He couldn't have gotten his cargo off the ship if she had landed. She was rerouted to Halifax and Garber flew after her. So did the strike.

Almost singlehandedly, Garber got his three cases

of airplane off the ship, and was stranded with them in Halifax. But a man who can teach a Navy to fly kites in the middle of a war is not to be deterred by a strike.

"I called up Washington and asked for my Commanding Officer in the Reserves. 'This is Commander Garber,' I said. 'I'm up in Halifax with three boxes full of the Wright plane. I want to get them to Washington. Don't you have a spare ship that can pick me up?'

"He said, 'Good God, Garber, you think of the damndest things.'

"But he also said he'd see what he could do, and sure enough I got a call that the carrier *Palau* had been ordered to come and get me. I got the boxes on board and was put on active duty long enough to bring them down to Bayonne, New Jersey, load the plane onto a Navy truck and bring it to Washington."

Retirement from the Smithsonian makes little difference in Mr. Garber's life. He is in his office almost every day and when at home in Arlington, Virginia, spends busman's holidays in his basement shop, making and repairing plane models for the Air and Space Museum and building more and more kites. He has "about a hundred" of them, varying broadly in de-

sign, for he keeps experimenting with new types. His wife often helps fabricate them. When he set about reproducing Benjamin Franklin's kite, he spent hours searching for "a large silk handkerchief"—as Franklin described the one he had used. Returning home, Garber found that "Buttons" had produced the proper piece of silk and, in fact, had carefully hemmed it to fit the frame.

"Did you do that on your sewing machine?" he asked her. "You should know, Mr. Curator," she answered, "that there were no sewing machines in Franklin's time. I did it by hand."

Smithsonian Associates' annual Kite Carnival, Paul Garber's baby, gets off the ground at Fort Washington, Maryland, out of deference to a D.C. law (since changed). From left: an Eddy kite, one with a grinning face—an award winner for the funniest—a modified Conyne (prizewinner for best use of aerodynamics), below it a hexagon, at far right a plastic Scott sled. Prizes also went for appearance and high score on performance.

Larry Williams, sax major at the University of Indiana gets in a few practice licks on a flute. Indiana's band is one of the finest.

Jazz aficionados' college sounds

Old pros join the College Jazz Festival at the University of Illinois— to play, to teach, and to listen with delight

"The only time anyone writes about jazz is to say it's sick or dead. Man, those cats are wrong. Jazz will survive on its own vitamins."

Cannonball Adderley said it at the National College Jazz Festival. And if what took place during this spring sound off on the University of Illinois campus is any indication, jazz is well supplied with vitamins. Some 250 student musicians from 19 colleges and universities came together for this two-day festival. It was endorsed by a grant from the John F. Kennedy Center for the Performing Arts. The event was also supported by Mrs. Charles Engelhard jr., a habitual patroness of the arts and by *down beat* magazine which also coordinated the concert. The festival received the backing of the American Federation of Musicians which allowed professionals to appear with students.

The bands and ensembles were chosen because they had either won competitions or were so good that no festival could be held without them. Among the jazz greats that came along to play and instruct the students were saxophonists Cannonball Adderley, Benny Carter and Gerry Mulligan, trumpeter Clark Terry and composer Quincy Jones. The festival had four concerts and a morning of clinics where the students discussed improvisation and musical technique with the pros. Between sessions, they talked jazz among themselves learning what's happening around the country.

It's hard to find jazz today. The radio beats out rock and country music. The old jazz haunts have closed.

To hear good, live jazz, the devotee often has to go back to school. In the last decade college jazz bands have mushroomed. There are now more than 450 bands and ensembles throughout the country.

The Festival was no Woodstock. The concerts were held in the handsome auditorium of the University of Illinois' Krannert Arts Center. The audience bridged the generations, long-haired, sandal-clad students sitting next to parents who could remember swinging with the big bands in the 1930s. There were no protests or pickets. The sole reminder of the turbulent spring was the wearing of black armbands by members of the Kent State band from Ohio. The message was the music.

It was straight jazz, mostly cool, with no rock, no folk music. Such familiars as "Take the A-Train" and Duke Ellington compositions were played, as well as a new piece by a Kent State University student. The music was first-rate. Many of these student jazz musicians have played professionally, leaving school for a while to play with, say, Woody Herman.

There were some very special moments during the two days of concerts. Quincy Jones conducted the Indiana band with Adderley on the sax. When they played "Midnight Sun Will Never Set" it was pure gold. Clark Terry electrified both audience and band. Terry would stamp his foot, call out "One, two, you know what to do," flip his trumpet upside down, and play beautiful music: a cool performance.

The pros loved it. Quincy Jones beamed as he listened. "These kids are just great. I would have done anything to have been able to learn and talk to some of the big names when I was starting."

"Just think of the sheer joy for these kids to be playing with people like Clark Terry or Mulligan or Benny Carter," said Cannonball Adderley. "Jazz has never had a big following. We want to be avant-garde.

Wilford Chapron slaps out a bass rhythm for his small ensemble from Los Angeles Valley College. Jazz covered the field from "oldies" to far-out.

Quincy Jones, conducting, draws good sounds out of Cannonball Adderley on the saxophone. It's a long cry from New Orleans in 1900!

If we pleased the masses, we probably wouldn't be doing enough."

After rehearsing with the University of Cincinnati ensemble, Gerry Mulligan was ecstatic. "That was just beautiful," he told the kids.

"I just hope I can make it easier for the students," said Clark Terry. "There was no one around to help me when I started playing."

If it was beautiful for the pros, it was a "gas" for the kids. Conga drum musician Michael Connor from Texas Southern University said it best: "I haven't ever been exposed to anything like this before. I knew what to do physically and now I know how to go about it mentally. Listening to Clark Terry and Gary Burton gave me a motive. It played a part on me, just being around. When I want to go and hear jazz back in Houston, I have to take a road map to help me find it."
—*deRosset Morrissey McQuade*

Student listeners love it. Bill Belt, his sister Lida and friend Jackie Brooks are enraptured by an Indiana band rehearsal.

In black armbands, Kent State's ensemble plays "Death Cry" in memory of fellow students killed in a confrontation with the National Guard.

Gerry Mulligan works out during a rehearsal session when the professionals gave tips. Many university music departments include jazz.

In McKinley Memorial Church, rich music from the renowned jazz ensemble of the University of Illinois rings from the gothic vaults.

Book reviews

Dissent in Three American Wars
Samuel Eliot Morison, Frederick Merk, Frank Freidel (Harvard University Press, $4.95)

The wars are the War of 1812, the Mexican War of 1846 and the Spanish-American War together with the Philippine Insurrection. The distinguished author-professors are all Harvard. The vantage point is definitely New England. In fact these three essays were originally presented two years ago as a series of evening lectures at the Massachusetts Historical Society.

The "dissent" here is all political. Once only does Professor Merk, in the course of his discussion of the Mexican War, make a quick sortie into American literary circles to mention that, among others, Ralph Waldo Emerson, Henry Thoreau, James Russell Lowell and Wendell Phillips were also dissenters. With this contemporary topic, the book makes stimulating reading. Its forthright approach should help people get their lines untangled at a time when peace is sometimes confused with pot, dissent with destruction, and history—including Henry Ford—with bunk.

These excellent essays will be the more graspable by those who feel a little at home in 19th century America and can cope with the plethora of names that crop up. And anyone with a lingering admiration for President Polk—perhaps a hangover from some high school history book—may as well surrender it now. Then again, if Polk had not stampeded Congress into war, would Mexico possess California to this day? Would this be good or bad? In retrospect endless questions arise.

The book contains some choice passages. For instance, in 1896, Theodore Roosevelt, writing to his hawkish friend, Senator Henry Cabot Lodge, accuses various Harvard professors and students of "ineffective bitterness proper to beings whose cult is nonvirility," when they fail to enter fully into the warlike spirit of those times.

Modern dissenters will see themselves as heirs to a long tradition and wonder why we never learned. They may ask, as Thoreau did in *Civil Disobedience*, "Can there not be a government in which majorities do not virtually decide right and wrong, but conscience . . . ? Must the citizen ever for a moment, or in the least degree, resign his conscience to the legislator?" When will we progress to the point where the total political extension of any republic, particularly ours, is not necessarily a young man bearing some sort of a weapon, fighting for a cause he is told is a cause?
—Henry Pelham Burn

Martha's Vineyard
Alfred Eisenstaedt, Henry Beetle Hough (Viking, $8.95)

Just under the armpit of Cape Cod floats Martha's Vineyard, a glacial divot that in summer absorbs impossible hordes of mainlanders—including *Life* cameraman Alfred Eisenstaedt—and in winter shelters its hardy crew of islanders—among them author-journalist Henry Beetle Hough. If Eisenstaedt and Hough teamed up to show us their island, we'd expect the result to be a gem. Well, they have, and it is. Almost.

Hough is history incarnate. He can tell you—and, alas, does—who bought Edgartown's first piano, when, what make it was, and who else kept up with these musical Joneses. As history his text is fine, full of voices from yesteryear. But now is history too; his brief glimpses of the isle today are like long time exposures in which the busy people don't register and only the statics come out.

Eisenstaedt does better. Some of his black-and-whites look tourist-taken and drugstore-developed, but every few pages a beauty pops out to keep you going until the color arrives. And when it does, all over the last 24 pages, you forgive him. There are the heeling windjammers, the paintpot sunset, the bronzed nymphs up to their bikinis in bluing and meringue, the seabirds loitering on limey piling or spumy beach, the derelict skiff drifting into eternity on waves of grass.

Such photographs deserve more text in the present tense; such a history cries for more illustrations from the past. Well, eat your vegetables; the dessert is scrumptious.
—Pat McGorum

Washington at War: 1941-1945
Scott Hart (Prentice-Hall, $7.95)

Scott Hart is no Edward Gibbon, but he's pretty close to Mark Sullivan. His *Washington at War: 1941-1945* is a witty, perspicacious, highly readable account of the drama, foibles, posturing—laced with brilliance—that was Washington during the seemingly endless years ("three years, eight months and seven days") between Pearl Harbor and the collapse of Japan.

This is no long-haired political discourse, nor is the reader scolded with the accusatory finger of history rewritten. Hart, a veteran newsman, simply turns his sharp focus on the lives of the capital's diverse *dramatis personae,* the little steno from Nowheresville, right up to the top dogs, F.D.R., Eleanor, Harry Hopkins, Harry S Truman.

Remember Pearl Harbor! Well, in today's dream world where war or peace is thought to be our own free choice, almost no one does. Hart etches the episodes of that black day in a way that brings back the shock and horror of a populace laid low. Does anyone remember the Japanese envoys who called on Secretary of State to talk "peace," even as Pearl Harbor was being bombed? Or F.D.R.'s one word, a stunned "No!"? Or isolationist Senator Gerald P. Nye, the darling of the right-wing America Firsters, who cried, "We've been maneuvered into this by the President!"? Or the burning by the Japanese of their documents? Perhaps here Hart's reportorial style is a bit much. "The confidential documents were reduced to smoke, but

during the process one accumulation shaped into a mushroom."

Oh, how the home front suffered! Shortages of housing, personnel, nylons, sugar, gasoline. *You* lost a son at Tarawa? Well, *we* have no cigarettes! Many a Women's Lib pulse will quicken at Hart's vivid picture of the G-Girls' plight; "Arriving in Washington, they had scant time to remember anything. . . . the absence of personal notice removed any sense of personal identity. . . . Back home the people had paid more attention to kittens in a litter."

It will seem incredible to today's kids that the Pentagon was once a national topic for mirth. In 1942 when the first 300 inmates trickled out to the hastily built behemoth, the gags began: "A virgin war worker . . . had entered the building, became lost in the maze of 17½ miles of corridors, 280 rest rooms and 150 stairways, during the ordeal was seduced, and emerged, with child, nine months later for delivery."

And so Hart takes us through the first rays of hope, the bombing of Tokyo, the slow island-hopping in the Pacific, the frightful suspense of a whole nation awaiting the D-Day landings on the Normandy beaches, right into the riotous celebration on the night of August 14, 1945, when Japan surrendered. A reporter described "a swaying . . . sea of humanity that howled and shrieked and hugged and kissed and just went daffy with delight."

The great moments are there too: F.D.R.'s insistence in 1944 that a reluctant Harry S Truman be his vice-presidential candidate over Henry Wallace, James Byrnes or William O. Douglas; Mrs. Roosevelt's poignant reaction to Press Secretary Steve Early's announcement of F.D.R.'s death, "I am more sorry for the people of the country and the world than I am for us!"

What does it all add up to, this prolific collection of related detail which garnished the Great Happenings vaguely remembered? Perhaps it shows what a country united in one purpose can accomplish. Perhaps it is intended to be no more than an amusing and enlightening peep into how it was on the inside of the amorphous asylum where the tunes were being called. Alas! When the curtain went down, we know now that they did not live happily ever after.

—J. Timberlake Gibson

Highlights

Arts and Industries Building: "Polish Folk Art," a selection of costumes, wood carvings, decorative forged iron pieces, will be here prior to a national tour. "Printing Transforms the World: Johann Gutenberg 1400-1468," including examples of the books that the printing press made possible, features a costumed printer who demonstrates in a reproduction of a printing shop of the period. In addition to the one-pound piece of Apollo 11 moon rock, the Early Bird Satellite—the world's first commercial communications satellite—will be on display indefinitely.

National Museum of History and Technology: "Women and Politics" follows the history of women in politics from 1640 to the present, in commemoration of the 50th anniversary of the 19th Amendment (see article page 24). "Spanish in North America" is a new exhibit of primitive religious art from New Mexico in the 18th and 19th centuries. "Laser 10," the history and applications of laser technology during its first ten years, is being held over through Labor Day. The Smithsonian Resident Puppet Theatre is presenting a variety show called "Confetti."

National Museum of Natural History: A new hall—Ice Age Mammals—is now open. "Alaska Totems" illustrates the vanishing totems through photographs and specimens. Several live "crown-of-thorns" starfish are on exhibit in the Whale Hall.

National Collection of Fine Arts: "Leonard Baskin," a mid-career review of his sculpture, paintings, drawings and book designs, will continue through July 26. Five famous caricatures by Thomas Nast will be shown through August.

National Portrait Gallery: A selection of sculpture from the gallery's permanent collection will be on display throughout the summer.

Note: The collection of the Museum of African Art will be at the Portrait Gallery into early September.

Division of Performing Arts: The Smithsonian's fourth "Festival of American Folklife" will be celebrated on the Mall from July 1 to 5, featuring performances and exhibits daily and concerts at night.

Cooper-Hewitt Museum of Decorative Arts and Design in New York City: Exhibition of 17th- and 18th-century "India Chintz" is here until August 6.

Traveling Exhibition Service: Some of the Smithsonian exhibits that will appear throughout the country during July are: Detroit, Michigan—"Henry O. Tanner Paintings" (Detroit Institute of Arts, to August 30); Kansas City, Missouri—"Armand Hammer Collection" (William Rockhill Nelson Gallery of Art, to August 2); Uniontown, Pennsylvania—"Yugoslav Naive Paintings and Sculpture" (Fayette Bank & Trust Company, to July 19); Colorado Springs, Colorado—"The Art of John Held jr." (Colorado Springs Fine Arts Center, to July 26); Gainesville, Florida—"Prints and Drawings by Lovis Corinth" (University of Florida, University Gallery, to August 2); Ithaca, New York—"Plastic as Plastic" (Ithaca College Museum of Art, to August 2).

The following study tours are being offered to members of the Smithsonian Associates: "Medieval Greece" July 6-27; "Decorative Arts and Textile Tour of England" September 10-October 1; "Palladian Tour of Venice, Vicenza and Verona" September 14-30; "Canadian Arctic" August 21-30; and the "Lewis and Clark Expedition" August 22-September 13. For further information see the May and June "Highlights" or write or phone the Smithsonian Associates Reception Center, Great Hall, Smithsonian Building.

The seamstress who saved our most famous flag

Amelia Bold Fowler

Born British, she lovingly brought back to life the banner that once defied Britain and inspired the writing of our National Anthem

Of the tens of thousands of Americans who look up at the "Star-Spangled Banner" where it hangs in the central hall of the Smithsonian Institution's Museum of History and Technology, very few have heard of Amelia Bold Fowler. Yet through her skill the banner that inspired our National Anthem has been kept from disintegrating.

Amelia Bold came to America from England and was married. After her husband died, she managed to maintain herself and her children by teaching embroidery. She established a studio in Boston in 1896, when embroidered flags were just then coming into vogue. Up to that time, many military and naval flags were painted.

She soon had all the work she could handle, but on a visit to the Hall of Flags in the Massachusetts State House, she determined to save old banners from rotting away.

Amelia recalled a girlhood trip to France where she had seen the Bayeux tapestry, embroidered perhaps 800 years before. Now she resolved to find out why the tapestry was so well preserved, and, as a result of her study, developed her own unique method for restoring flags.

The Fowler technique brought new life to the historic flags at the Naval Academy. But Amelia's greatest assignment was to restore the "Star-Spangled Banner" in the Smithsonian. This was in 1914, just 100 years after the British attack on Fort McHenry at Baltimore, where Francis Scott Key saw that the

In the "chapel" of the old Smithsonian castle Mrs. Fowler's needlewomen stitch remnants together.

fort's flag "was still there" after a night-long bombardment. The flag was in fragments. They had been stitched to a backing of sailcloth at the Boston Navy Yard years before, reportedly by Rear Admiral George Preble. To Mrs. Fowler, the job seemed almost hopeless—putting together "a fragile heap of rags."

Even the rags did not add up to a complete flag. Souvenir hunters, over the years, had snipped away portions of the emblem. Some of the tears may possibly have been made by British cannon shot.

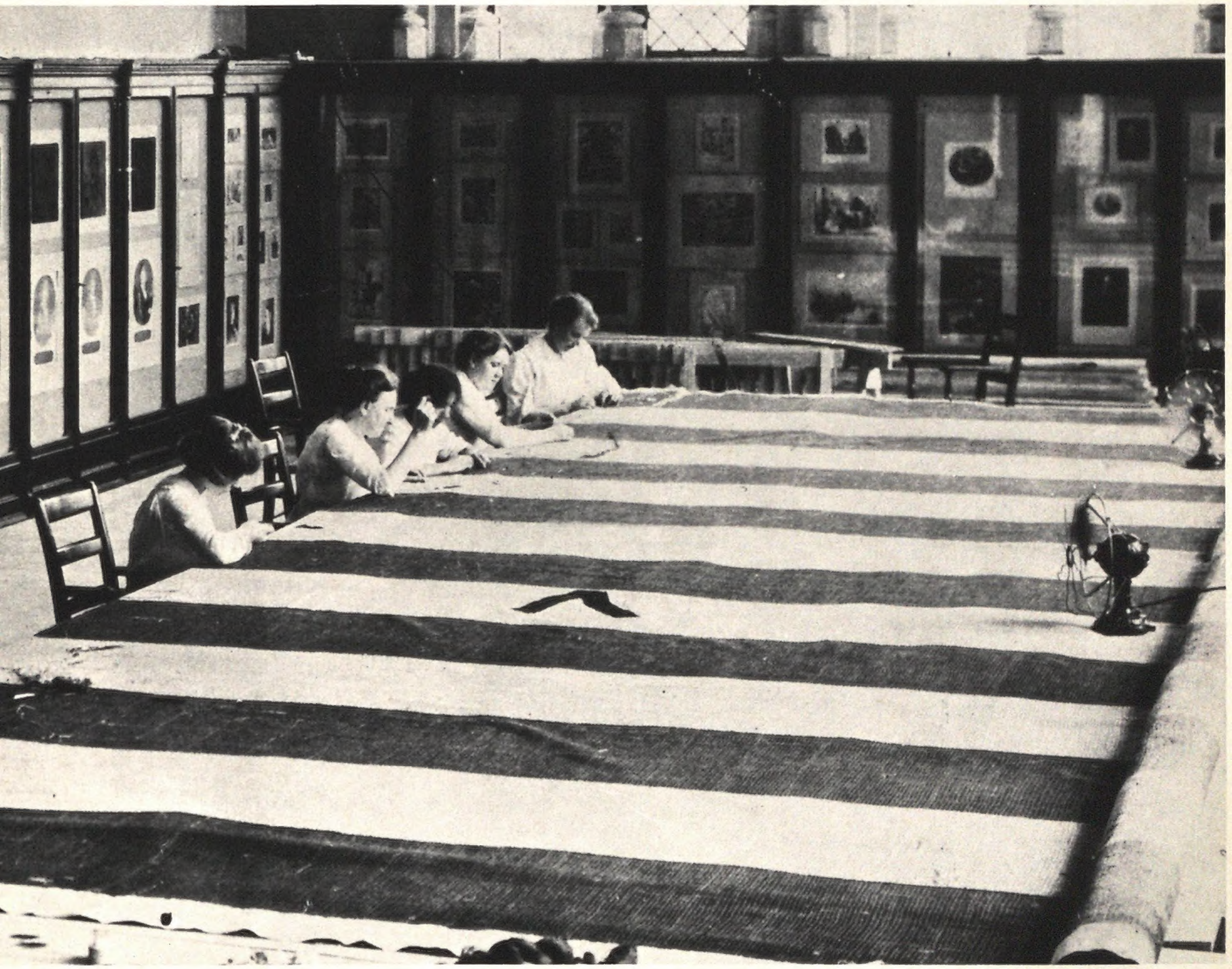
Mrs. Fowler put the pieces on an Irish linen backing, stitching them in place and sewing tapes to the backing so that the flag could hang without falling apart. For years it was displayed in a special case in the Smithsonian's Arts and Industries Building.

The flag is guarded against variations in temperature and humidity and is kept free of dust by a gentle current of air. The missing bottom portion of the flag has been reproduced to give a visual indication of its original size. When it flew over Fort McHenry it measured 30 x 42 feet.

The "Star-Spangled Banner" is one of the few 15-star, 15-stripe flags in existence. In 1818 the current procedure was established—13 stripes and the addition of a star for each state.

No one can explain the small red "V" on one of the white stripes. It was there when Amelia Fowler and her assistants tackled their vast project, and they preserved the puzzle along with the flag.

—Franklin Winters



Famed standard greets visitors to the Smithsonian's Museum of History and Technology. Its huge size was not unusual for garrison flags of the eary 1800s.

Secretary Ripley's comments

The view from the castle

How our dwindling wilderness inspired
Secretary Langley to start a zoo—
and how the elephants came, two by two

Myths die hard. The endless frontier in America which so captured our national imagination through the 19th century inspired the need for technologies on one hand, and a spirit of recklessness on the other. These elements persist in the American character. The myth itself still persists. It is involved in relict clothes still preferred on many western city streets as if the owner was just out of the saddle, in the little boy's dream of hunting and in the householder's possession of a cherished rifle, kept to shoot *animals,* for who knows when a wolf may slink across a back lot? The frontier died somewhere between 1900 and the end of World War I, but our deliciously nostalgic illusions persist.

A few pioneers decried the myth of an endless frontier. In the '90s conservationists began to make their voices heard, inspired by the accounts of John Muir and John Burroughs. Men like William Dutcher, Gifford Pinchot, Theodore Roosevelt and Frank M. Chapman, to name a few, sounded the alarm about the rapid decline of forests and prairies, of buffalo, pronghorn antelope, wild turkeys and heath hens. So dawned the age of conservation and environmental concern.

At this time Samuel Pierpont Langley was third Secretary of the Smithsonian. An astronomer, Langley founded the Institution's Astrophysical Observatory in 1890, catapulted an unmanned flying machine above the Potomac River in 1896, finally achieved American participation in the International Catalogue of Scientific Literature in 1901, worked for the creation of the Institution's National Gallery of Art and collected both English and French literature. He was a lonely and silent bachelor whom Thomas Carlyle called "the most sensible American I have ever met." Langley afterwards explained that he had achieved the distinction of being so described by never opening his mouth.

Yet Secretary Langley loved children and animals, and soon came under the influence of one of his colleagues, William T. Hornaday, then head of the taxidermy department of the U.S. National Museum. In the interest of educating the American people in the principles of conservation and the preservation of animal species, Langley decided to start a zoo. In 1890, Congress finally authorized a National Zoological Park under the Smithsonian. Langley picked a site in what is now Rock Creek Park in the District of Columbia. Some 200 animals, previously kept in pens behind the Smithsonian Building on Washington's Mall, were moved in carts to the zoo.

Two elephants, Dunk and Gold-dust, were marched to the new site by William H. Blackburne, the head keeper. William Mann, former director of the zoo, tells the story. "Mr. Blackburne, going ahead, warned the people to look out for their horses. An elderly express driver with an elderly horse, who had a station at Thomas Circle, replied that his horse was too old to run away. He was mistaken."

So Langley joined the ranks of the pioneers in conservation, years ahead of their time, precursors of the decline of the endless frontier.

S. Dillon Ripley

In three weeks he may be dead.

In the beautiful woods and valleys of eastern Oklahoma time is running out. Up to fifty percent of the newborn fawns are being lost each year because of ticks.

When large numbers of these crab-like pests attack a healthy young deer, he cannot live for more than a few weeks.

And it isn't just deer that are affected. Ticks will attack virtually any land animal or bird they can get hold of.

But there is a way to control these marauders—kill them on the ground where they breed.

To do this, the Oklahoma Department of Wildlife Conservation together with Oklahoma State University are using Shell's Gardona®, an insecticide. A mere pound to an acre can kill the resident tick population for up to nine weeks.

Yet it will not harm animals, birds, plants or people.

Shell has also funded a grant to Oklahoma State University's Department of Entomology for more intensive study on the control of ticks.

Shell's concern with wildlife is only part of an all-out program to help save our environment. So far we've backed our commitment with millions of dollars a year in the war against pollution.

And we're moving as fast as we can.

Because, like the fawn, we're all running short on time.

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